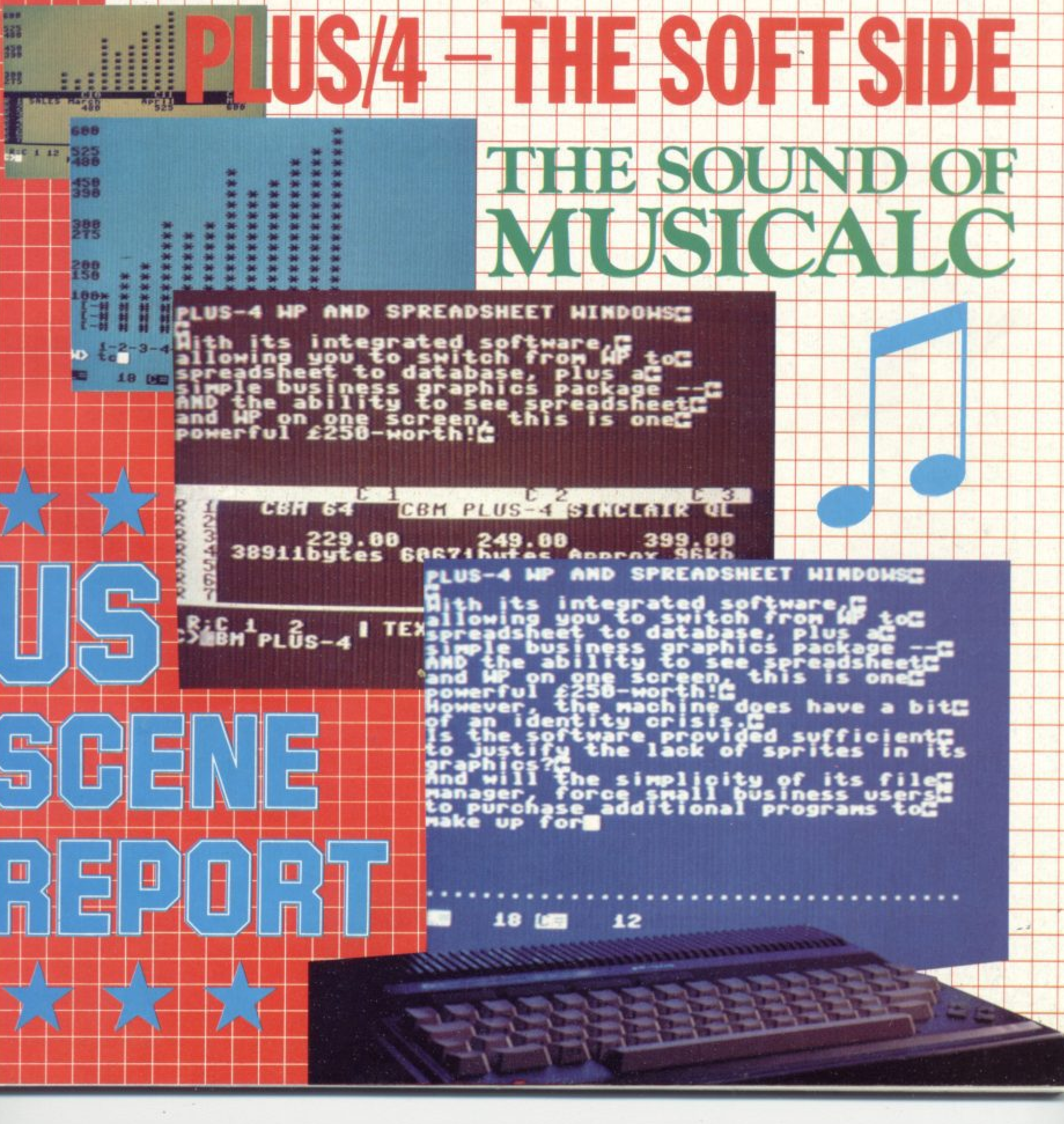
COMMODORE user

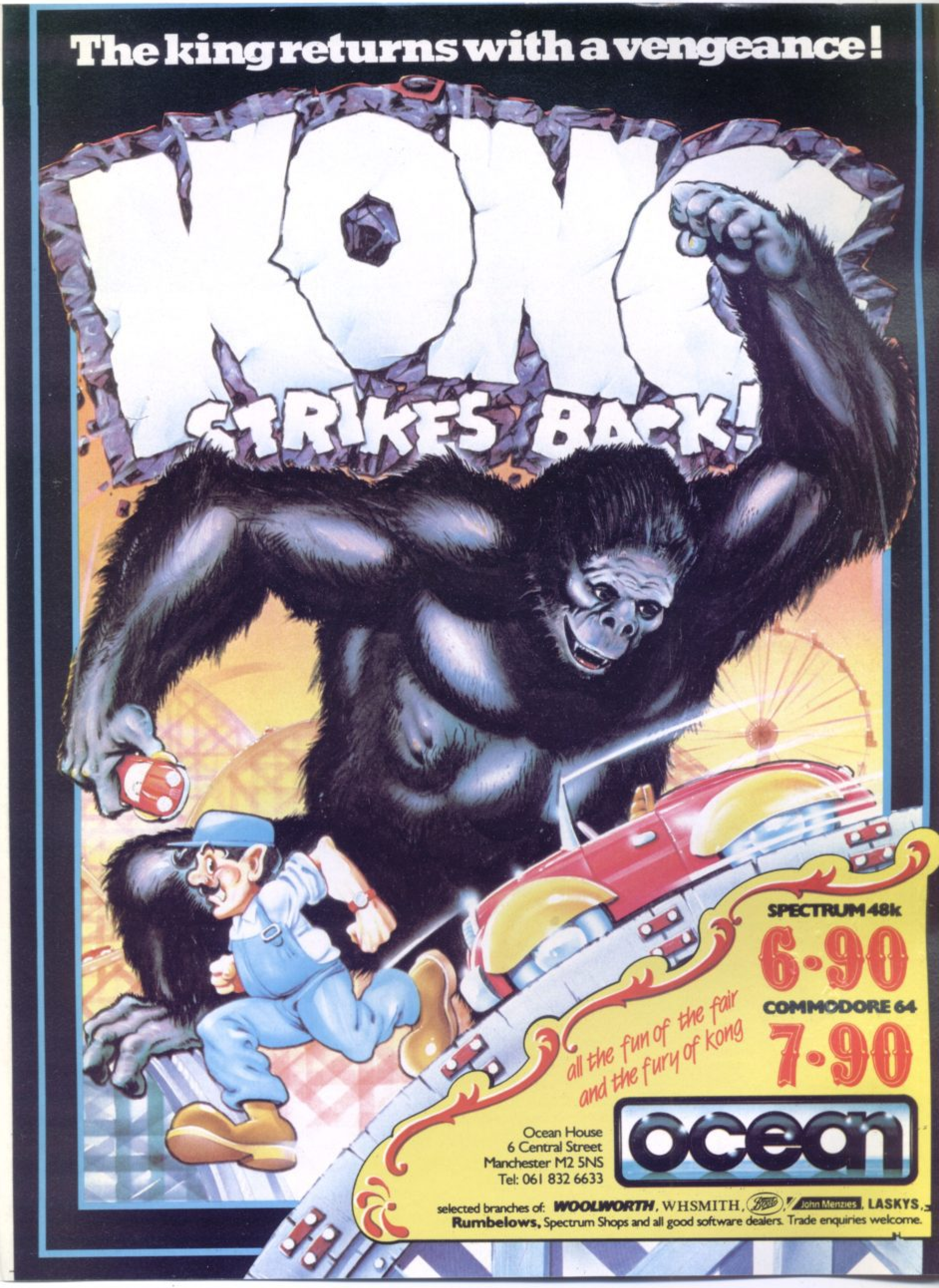
Incorporating Vic Computing An EMAP Publication Volume 2 Issue 2 November 1984 UK Price 85p

PLUS/4 — THE SOFT SIDE

THE SOUND OF MUSICALC

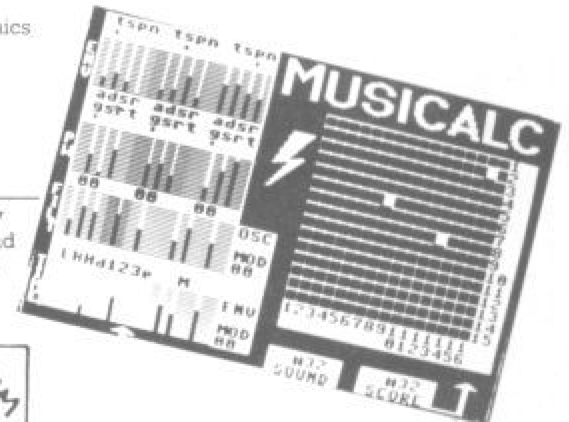
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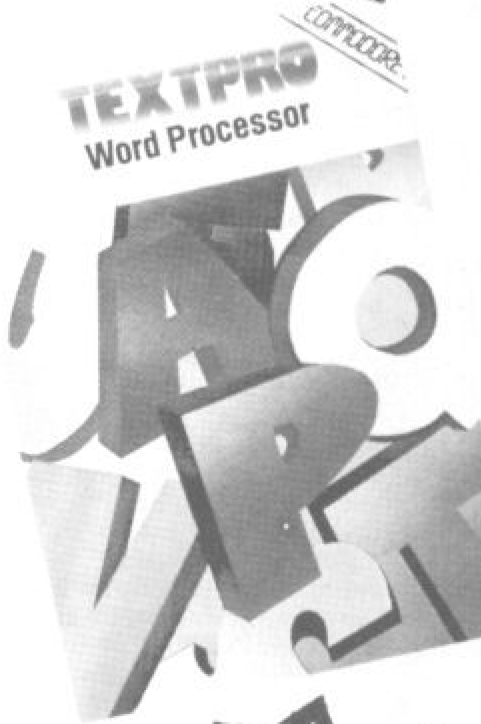



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Use your loaf

The market for educational software is now well under way, but it is still courting only the tender of age and has left adult computer users twiddling their thumbs. **Tryptich Publishing**, a new British publishing house, is trying to remedy that situation with its range of Brainpower software, available for the Commodore 64.

The range sets out to enable adults to learn practical skills – skills like starting your own business, project planning, business forecasting and general decision making. "Our target market is people who have bought a micro and want to put it to serious use without necessarily learning to program", says Tryptich MD, David Juster.

Each title in the series costs £19.95 on tape (£24.95 on disk), and they all contain an educational book and program, together with a practical applications program. Five titles are currently available for the Commodore 64.

Entrepreneur is designed for the budding businessman and deals with the intricacies of budget forecasting, profit and loss accounts, balance sheets, overheads, assets and liabilities. *Forecaster* delves into financial planning and forecasting at a deeper level – sounds rather like an electronic spreadsheet calculator.

Numbers at Work deals with "all the arithmetic problems you're likely to face in your day to day business life", according to the blurb. Another package, *Decision Maker*, lets you explore all the avenues in making those tough decisions whether they involve business or family. And finally there's *Project Planner*, a planning and assessment tool. Two more programs, Cash Controller and Statistician, are already in the pipeline, according to Tryptich. More details on 0276 62144.



Keeping tabs on your tapes

Commodore users who store their programs on cassette soon find that their index cards and cassette labels become a mass of indecipherable scribblings. A new company called **Tape Tabs** is all set to remedy that for you. And it's a pretty simple idea at that.

Tape Tabs will sell you a pack of ten cassette index cards with a different and colourful design on each. There are four different packs, each with a different coloured spine. That gives you 40 different insert designs – and the packs cost a mere 85p each. You can also buy a pack of ten cassette labels which contain three sheets of rub-down letters for "a professional finish". Those cost 85p, too.

For the more artistically adventurous, there's a DIY pack (same price) which lets you use your own designs for your cassette insert. Looks like a pretty cheap and colourful way of getting your tape library organised. You should be able to buy Tape Tabs where you buy your blank tapes. More details from Tape Tabs, PO Box 157, London SW11 3NT.

Zapping with Busby

An unlikely new software house is set to squeeze itself into the already bulging games market. It's called **Firebird**, a subsidiary of British Telecom. It's claim to distinction is selling games for a mere £2.50 and putting a full colour screen-shot on cassette inlays. If you're slightly put off by the cheapo price, Firebird has the reassuring comment: "despite the pocketmoney price, Firebird will offer the same quality as some products costing twice as much".

So what's on offer? Five fast-loading arcade titles (*Mr Freeze, Booty, Exodus, Headache* and *Zulu*) are soon to appear for the Commodore 64. Commendably, Firebird has not forgotten the Vic, which gets two arcade games: *Snake Bite* and *Mickey the Bricky* (those don't fast load). No review copies yet – maybe we should phone them.

Tymac Talkies

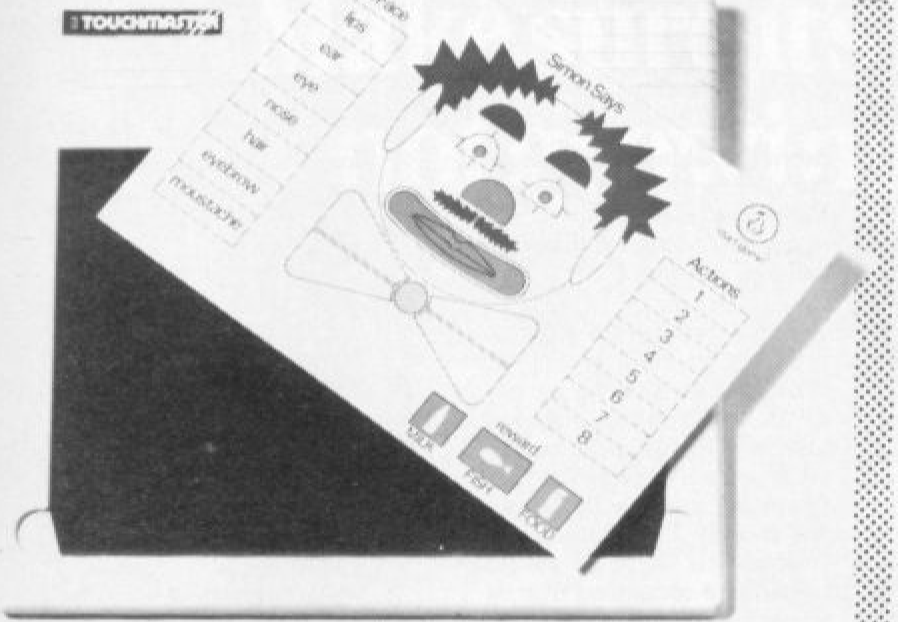
Tymac UK, part of the American Tymac Controls Corporation, has introduced a range of 'talking' games for both the Vic and Commodore 64 which don't need a synthesiser attachment – speech is digitised and loads with the game itself.

For the Vic, Tymac has two arcade-style games featuring "words, music, arcade sounds and sound effects" called *Samurai* and *Code Name: Deadline*. There's also an educational game called *Type Snyper* (also available on the 64) which helps players use a typewriter style-keyboard. All three offerings are available on cartridge for £12.95. A graphics package called *Wizard's Graphics* should be available soon, according to Tymac, on disk costing £12.95.

For the Commodore 64, there's *Flyer Fox* (you're a fighter escorting a Jumbo jet), *Gandalf the Sorcerer* (castles, sorcery et al), *Pegasus* and *Trials of Peseus* (in both games you search for treasure) and finally *First Strike* (something tasteless to do with firing nuclear missiles ...). That lot is available on cassette for £9.99 and on disk for £14.99. No news on how effective the 'talk' facility is – we're waiting for our review copies.

SHORTS

Slow on the draw: *Those of you who didn't buy a Stack lightpen because it lacked a drawing program will be pleased to hear that the company has (at long last) rectified matters. It's offering the lightpen, complete with a paintbox package, ten games (all on the same tape), and a useful 40-page manual for a very reasonable £28. If you already own a lightpen, Stack will offer you an 'upgrade kit' for a mere fiver.*



The soft touch

Touchmaster is a new pressure-sensitive digitising tablet from a new company of the same name, the idea being that it replaces your Vic or Commodore 64's keyboard as an input device.

Touchmaster reckons that home computers generally are not fully utilised, the main reason being the resistance to using the conventional keyboard, especially from younger children.

The tablet's pressure sensitive surface is A4 in size, and has a quite impressive resolution of 256 by 256. Interface options include serial and parallel so, in theory, you could use it with a wide variety of micros. It has a data transfer rate of 9600 baud.

Touchmaster is not just marketing the product as a drawing device with appropriate software, but with a range of games, called Touchware, which include an overlay that fits over the pressure-sensitive surface. Instead of using keys to play games, you touch various parts of the inlay.

At present, the range includes some early learning educational programs; board games like chess, draughts and Othello, a few arcade and adventure games, a graphics editor and a music synthesiser. Prices haven't been finalised yet but the education and games software should be selling for around £15.

Touchmaster itself comes complete with 'multipaint' drawing program, interface for your Vic or 64 and costs £149.95. More details from: Touchmaster Ltd, PO Box 3, Port Talbot, West Glamorgan.

SHORTS

Fresh start for Virgin: *Virgin has announced that it's to make a fresh start in the games market by throwing out all the duff titles from its existing catalogue and selling what remains for £2.99. That means you'll get Falcon Patrol and Hideous Bill on the 64, and Mission Mercury on the Vic at a bargain price.*

Says Virgin MD Nick Alexander, "we have changed with the market – this autumn we are only releasing 6 titles, all of which have been extensively researched and tested for market appeal, and we're going to market hell out of them" – and spend around £250,000 doing it. Of those six titles, three are for the 64: Falcon Patrol II, Terrorist, and Sorcery. They all cost £7.99. Maybe next year they'll be somewhat cheaper?

The view from Commodore

Jaded press hacks may have been slightly bored at Commodore's official launch of its new Plus/4 and Commodore 16 machines (after all, we've been hearing and writing about them since most of us can remember), but ears must have pricked up at Howard Stanworth's speech. Commodore's UK general manager managed to reel off a set of statistics and proclamations that sounded both impressive and provocative.

Micro manufacturers generally feel the need to justify new models and Stanworth didn't flout tradition with: "these two machines will reinforce Commodore's position of leadership in a home computer market which is becoming more sophisticated and increasingly competitive in the process". That sounds fine until you consider the two machines aren't particularly sophisticated and not quite as competitively priced as Stanworth would have us believe.

But with bumper sales figures still to announce, that won't bother him much: figures like Commodore achieving quarter billion dollar worldwide sales in the last finnancial year and total UK sales exceeding £100 million; "it leaves every one of our competitors in the home computer market so far behind that I believe it will be a very long time before our position as Number One is likely to be even challenged" – and all that said in a rather matter-of-fact way.

More amazing statistics to follow: Commodore is investing more that £20 million in its new Corby plant where Commodore 64s are being churned out at the rate of one every five seconds – and that's only half its capacity. No wonder then, that Stanworth should be able to hold aloft the one millionth 64 to be produced at Corby since it opened fifteen months ago.

Battle for Britain

Despite these mammoth sales figures, the Battle for Britain being fought between the 64 and the Spectrum rages on. Although Stanworth admits the Spectrum sold better in terms of units, the lead in 'value' sales must go to Commodore. That is probably changing too. According to Stanworth, a recent Gallup poll puts Commodore and Sinclair neck and neck in terms of numbers of machines sold.

That brings Stanworth on to Christmas and the market for the new machines, and the consequent lack of a market for the Vic-20, which has now sold around two million world wide. The Commodore message is clear "the 16 will eventually supercede the Vic-20 as the world's favourite entry-price computer". Like the Vic, the 16 is being sold as a Starter Pack, for the same price of £139.99. That should surely sound the Vic's death knell.

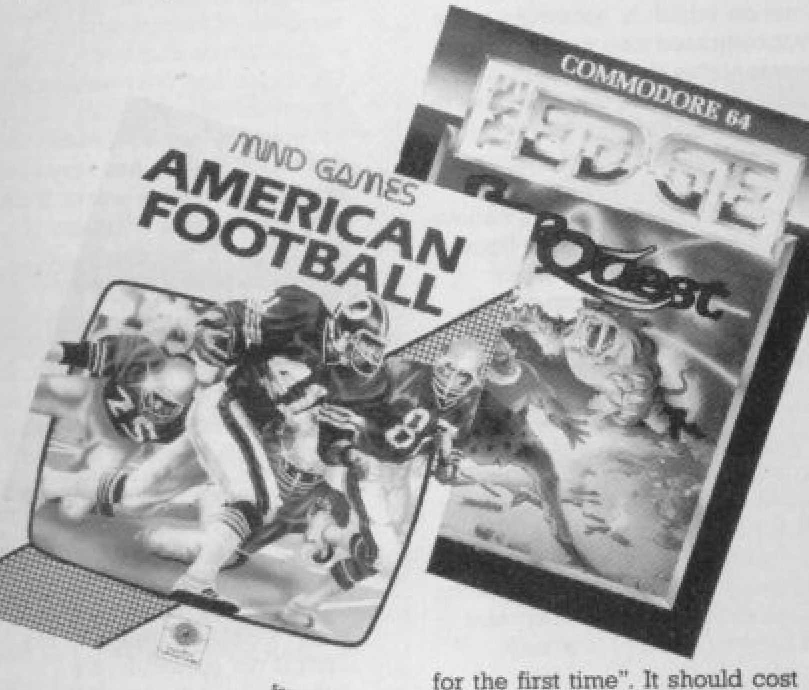
About the Plus/4 Stanworth opined, "we believe that this product is the first evolutionary step towards an affordable home computer for the more serious user". Confident remarks but £299 is not outstandingly 'affordable'. The 64 is £100 cheaper and offers a wealth of 'serious' software. For the extra money, a good shopper will acquire better software than the Plus/4's ROM variety. Asked whether Commodore planned to drop the 64's price, Stanworth replied, "unequivocally no".

The philosophy behind the new machines may be difficult to follow but, one thing's for sure, Commodore will be bombarding us with it through the weeks leading up to Christmas, the final word from Stanworth being, "we will be spending more on advertising and promotion than any of our competitors, and probably more than any other consumer electronics company in Britain".


Not the £1 million Bingo winner: Howard Stanworth with the millionth 64 out of Corby

What's on Show

by Henry Deckhand



The Personal Computer World Show, now being plugged as "the most popular microcomputing event in the world", has become the traditional venue for the industry's pre-Christmas limbering up; suppliers of new machines, games and add-ons jostling for position to stick their products in front of your nose, or better still, your wallet.

Despite that, there wasn't much, apart from lorryloads of new games, to set the average Commodore user's pulse beating. Commodore itself showed its nearly-new machines, the Commodore 16 and Plus/4; and quashed ugly speculation that the 16 is not capable of spawning a game by announcing a range of three cartridges (*Jack Attack Viduzzles* and *Strange Odyssey*) and a cassette game (*Mayhem*), featuring a certain 'Blibbles' character. With four games being packaged up as 'freebies' in the Commodore 16 Starter Pack, 16 owners won't be twiddling their thumbs.

But Commodore did reveal something really new, the *Music Maker* package for the 64, which includes a 24-key keyboard (it fits on to the 64's keyboard), a tutorial manual and a book of songs – well, mostly Beatles oldies. According to an enthusiastic yet inaccurate Rae Potter, Commodore's UK software marketing manager, the package will "unleash the full music potential of the Commodore 64 for the first time". It should cost around £30 and be available before Christmas.

The Commodore 64 modem (£99.99) you need to access the Compunet interactive viewdata service, is now officially available, and the service officially up and running, having received an airing at the Commodore Show in Hammersmith earlier this year – before the modem got official British Telecom approval. Now you'll be able to send and receive data, access masses of information and buy software et al from your armchair – the sedentary society has truly arrived.

Fun and Games

Visitors who spotted the robust figures wearing helmets and shoulder pads wandering round the stands, worried whether such protection was really necessary for the average Show-goer. In fact, the bulky bodies were promoting the new *American Football* game from **Mind Games**, available on the Commodore 64 for £9.99. Mind Games claims it's almost as exciting as the real thing – enough said.

CRL also announced some sporty titles (Spectrum conversions) for the 64: *Cricket 64, Handicap Golf, Showjumping* and *Derby Day*, all selling for £7.99. If those are too energetic for you, **CDS** is launching its new *Steve Davis Snooker* game (£7.95), also for the 64, featuring on the insert card the aforementioned potter squinting down the table. Funnily enough, the ubiquitous Steve guested at Vision's Snooker game launch last year – and wouldn't lend his name to the title.

Playing to win

Whilst Haresoft continues to plug its 'Masquerade' game (jewelled hare or £30,000 for the winner), other software houses are beginning to throw largesse at the dedicated Adventurer. **Domark** has launched not only a megagame containing five adventures and five arcade games, called *Eureka* (£14.95 on the Commodore 64), but it is offering a £25,000 prize for the first person to solve a mystery that spans from the Roman Empire to present-day espionage. By the way, what you're looking for is a pnone number.

A burly security guard at Domark's stand fixed his gaze solidly on a display cabinet containing stacks of fivers. No such precautions on **The Edge** stand. That company is offering the sceptre from its new *Quo Vadis* 1,000-screen megagame for the Commodore 64 as a prize for the first solution. That lump of gold and crystal is said to be worth £10,000.

But you don't have to be an adventurer to get on the bigish winnings. **Martech** is offering five BMX bikes as 1st prizes in its *Eddie Kidd Jump Challenge* game. Apparently, you save your highest score on to tape and send it to Martech. Meanwhile, Eddie himself featured on Martech's stand, posing languidly for photographs.

Teach yourself

Another avenue software houses are eagerly exploring is education, and the idea that learning can be fun – if you're using a computer. But most of the titles on display amounted to Spectrum conversions.

New software house **Hill MacGibbon**, for example, exhibiting its ware under the banner, "games to stretch the mind", released Commodore 64 versions of Spectrum packages that appeared some time ago from Heinemann (both Mr Hill and Mr MacGibbon are former Heinemann men). Titles include *Ballooning, Punctuation Pete, Car Journey* and *Special Agent*. They cost £9.95 each and include a well produced and colourful pamphlet.

Similar Spectrum-Commodore conversions came from **Argus**, with its *Clever Clogs* early learning series, and from **Ebury Software** with its *Mr T* range for 4-7 year olds.

Cult following

Followers of **Llamasoft's** Jeff Minter or more accurately, of the weird subjects of his games, will be pleased to hear about his latest creation to be launched at the Show: it's called *The Ancipital* (£7.50), the aforementioned being half humanoid, half goat. The game is an arcade/adventure in which you plough through 100 screens, collecting camels and goats. And Jeff's cryptic comment on it? "It's an adventure for blast 'em up addicts who hate adventures".

For those of you who swoon over neither genre and who'd prefer to create their own games, **Mirrorsoft** was showing its new *Games Creator* package for the Commodore 64 (£12.95 on tape, £15.95 on disk). According to Mirrorsoft's blurb, it's "all you need to create and play your own unique games", without needing programming skills. Three games are included in the package to show you what can (and can't) be done. We'll be reviewing it next month.

Similar claims were being made by **Activision** for its new *Designer's Pencil* program also for the Commodore 64 – "draw the world and everything that's in it" it enthuses. The Designer's Pencil lets you create hi-res graphics and music without resort to traditional programming, using a joystick. It costs £11.99 on tape and £19.99 on disk.

For those of you who thought the games software industry was facing a recession, the PCW show may have proved you wrong. After a pretty lousy summer, software houses displayed yet another bumper crop, ready to make the cash registers ring out for Christmas. But what was showing amounted more to gimmicks than real innovation – rather like sticking an extra layer of icing on last year's cake. ●

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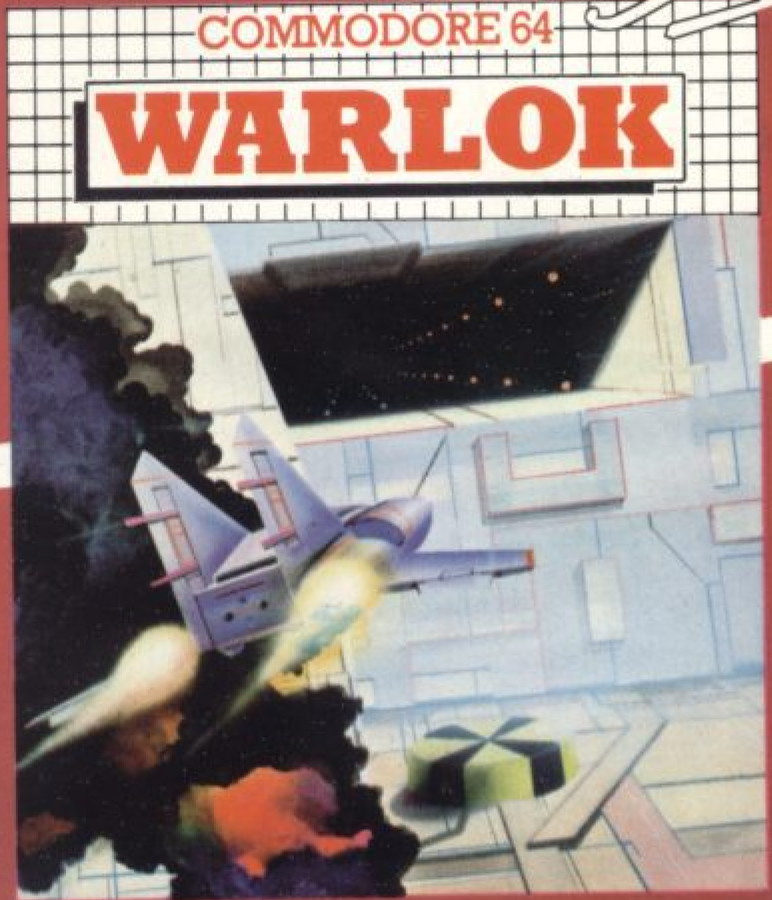
These include the use of advanced BASIC (a more sophisticated, yet simpler form of BASIC), a unique Help key so you can quickly identify programming errors, a large 64K memory (with an astonishing 60K available for use), and a real typewriter keyboard.

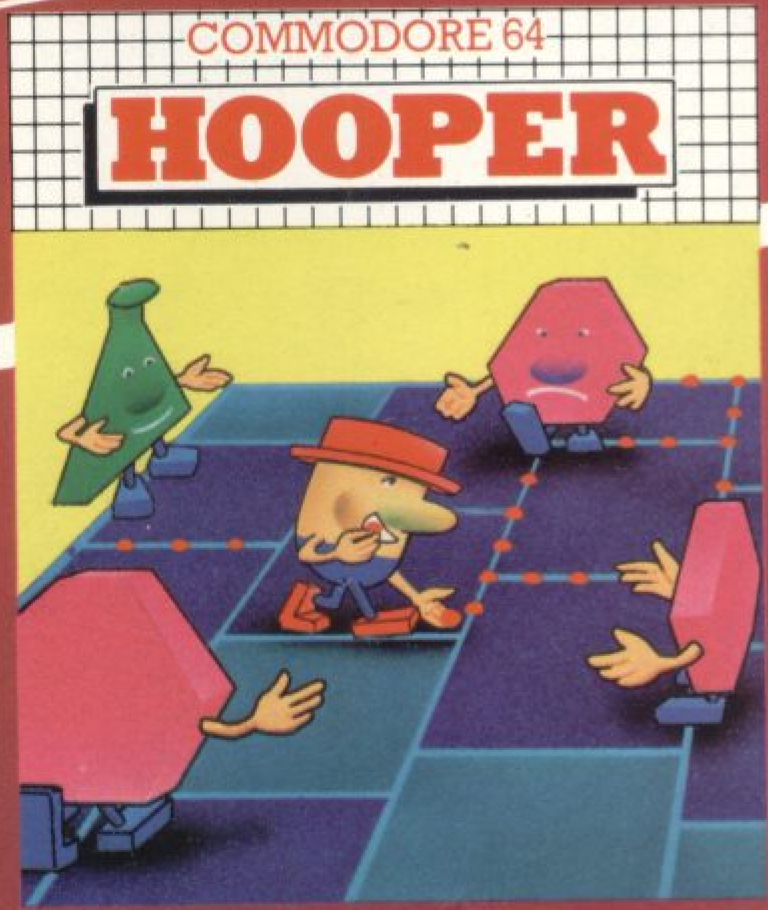
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Soft option for the Plus/4

The Commodore Plus/4's built-in software reviewed

by Karl Dallas

Last month, Karl Dallas took a preliminary look at Commodore's new Plus/4 computer. He concluded that its success would stand or fall by the power of its integrated ROM-based business software. And those facilities will inevitably bring it into head-on competition with the Sinclair QL. This month, he puts the Plus/4's built-in wordprocessor, file manager, spreadsheet and graphics packages through their paces. How did they fare under his scrutiny?

Getting into the Plus/4's integrated software is quite a simple process. When you turn on the machine, the power-up message reads:

Commodore Basic V 3.5 60671 bytes free
3-Plus-4 on key F1

By pressing F1, the line appears under the title message: **SYS 1525: 3-PLUS-1** and then after you've hit the Return key, you're very quickly into the word processor.

This is the front end of the system in more ways than one, for all printing takes place via the WP module, though to change the colour of the screen display (you'll need to, because it comes up in a rather glaring white on black as a default setting), you have to go to the spreadsheet.

Movement between the software modules is achieved by pressing the 'CBM' and 'C' keys simultaneously. That's followed by TC (To Calculator) to get to the spreadsheet, TF (To File manager) to get to the database, or TW (you guessed it, To Word-processor) to return to the word processor. Graphics (such as they are) can only be accessed via the spreadsheet, because they're basically a subset of the spreadsheet commands. It's all pretty logical, really.

Movement is virtually instantaneous, and what's more, if you leave word processing to check some data via the file manager, the text you were writing is still there when you go back, though the reverse is not true: File Manager has to access disk to get back the record you were looking at.

It is possible to split the screen between the word processor and spreadsheet, so that you can check one against the other, and there's a BLKMAP command that will move whole chunks of the spreadsheet into the WP area for printing. Such blocks can, of course, then be edited and manipulated using the normal WP commands.

This is also true of the graphics facility, which displays a fairly low-res barchart made up of hash signs in the WP area (more about that later). But using the search-and-replace facility in the WP package, you can substitute an asterisk, say, or indeed any character you like. It's also possible to blank out all but the top character in each bar, replace the top hash with a dot, and get a point graph.

The Word Processor

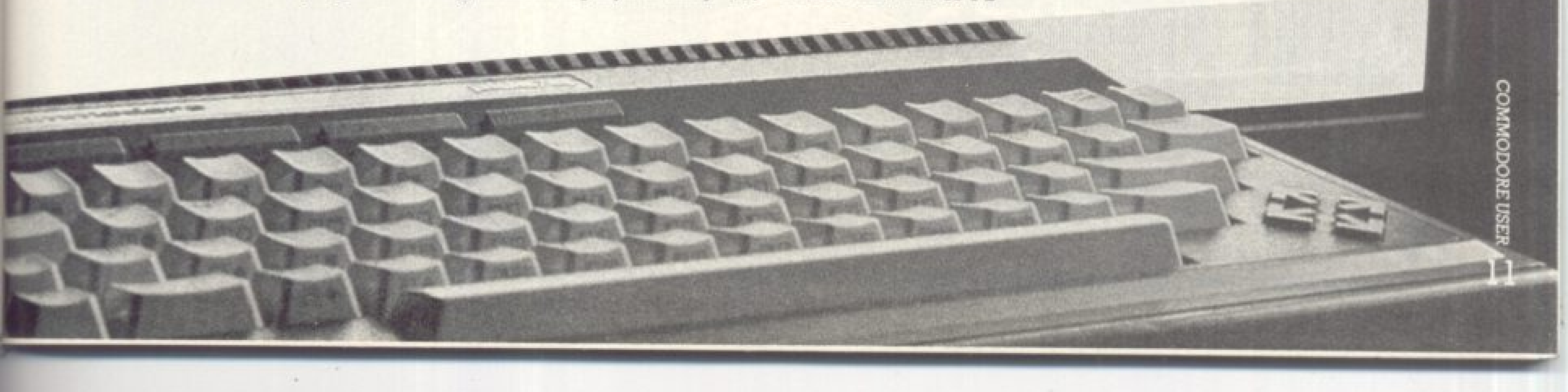
The word processor is post-formatted, which means that what you see on the screen is definitely not what you get when you print out the result. Words are split between the end of one line on screen and the beginning of the next. And that may put off some users. I'm a post-formatted man, myself, and when I'm given the option I always turn off screen word-wrap for extra speed in typing.

The VDU screen format is fixed, however, at 77 characters wide by 99 lines deep, with a 37 x 22 window scrolling across and down. This is a more serious liability, to my mind, because it can be difficult to keep the entire lines in one's mind as you're typing. On top of that, there is no view-to-screen facility so you can't see what your text will look like when printed.

Still, 77 times 99 is a reasonable amount of text memory, but not as good as the popular Commodore 64 programs which allow four or five times as much: at 7623 characters (about two pages of solid A4 typing), it invites comparison with Easyscript's 30,560, or Wordcraft 40's 26,623. That speaks for itself.

It has all the usual commands plus two valuable ones. **CBM-@** will reinstate text removed by accidentally hitting Return (a common mistake I'm still making, after nearly five years of word processing). And **CBM-Q** will repeat a previous keystroke.

In addition to the obvious cursor and other editing controls, **CBM-R** or F1 jumps rightwards to column 41 and **CBM-L** or F2



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moves to the left margin, something I have to type SHIFT, RETURN and CURSOR UP to achieve on my rather more expensive word processor. Tabs are set with **CTRL=** and tabbed to with **SHIFT=** which is also the tab clear command. So that if you want to get to the second tab, you might erase the first instead. I can't understand why neither the Commodore 64 nor the Plus-4 came with a dedicated TAB key!

Format, block and search

Formatting instructions are begun with **CTRL/9**, which sets them into reverse video, and terminated with **CTRL/0**, which turns off the reverse.

Blocks may be identified and moved or deleted, but only if they are no longer than 16 screen lines. Files may be SAVEd, LOADed or MERGEd. There is no block save for SAVEing part of a document. A document may be printed from disk without losing the document in memory. What happens is that the document in memory is automatically SAVEd to disk with the name 'workspace' after the PR command so that the new document can be LOADed and PRINTed, after which the original is reLOADed. There is no true print-from-disk (background print, as it's sometimes called).

Search and search-and-replace is not automatic; the user is asked each time the search string is found if it should be replaced, and if the search should continue. Some WP programs do this automatically. Best is a program that gives you the option to turn auto-replace on or off. And the **CA** command will print a disk directory without affecting the document in memory.

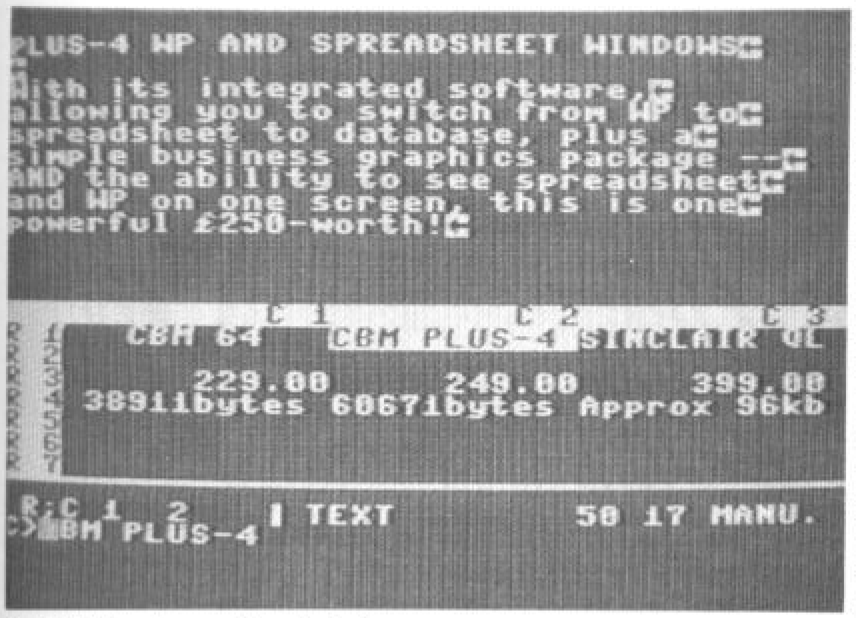
Printing it out

Since the WP module is also used for printing out spreadsheets, there is a facility for turning off word-wrap on print-out, to prevent the end of one spreadsheet line linking up with the beginning of the next as one word.

There is an **OTHER** command for sending standard ASC11 (rather than Commodore ASC11), and ASC11 printer control characters, bold or enhanced text for instance can be sent.

Page numbers are printed only at the bottom of the page and any number of linked files may be printed. This is not even limited by the space on the disk, since a pause could be inserted to allow for disks to be changed. There is no provision for a prompt message to be displayed, explaining the action to be taken. The **PAGEPAUSE** command pauses the printing at the end of each page. Continuous printing is the default setting.

If no formatting instructions are specified, the program prints



Plus/4 WP and spreadsheet windows

with a default setting of left margin at 0, right margin 77, page length 60 lines, paper length 66 lines, justification off and wrap on.

Surprisingly, there is no simple way of instructing the printer to employ double or triple-line spacing. It can be done with ASC11 control characters, of course, but this will also require adjustment of the page length command, and anyway, not all printers accept ASC11 control codes.

Anyone new to word-processing would probably find the very possibility of things like search-and-replace miraculous, but there's no way anyone would upgrade from a Commodore 64 with Easyscript, say, to the Plus/4 on the basis of this software. I imagine that even a first-time WP-user would soon realise that other things ought to be possible.

It might have been a good idea to have given the user some say in how the memory was partitioned, with an option to dedicate it all to WP, or WP/spreadsheet 50:50, etc. Presumably the new versions of familiar software being written for the Plus-4 will take advantage of the extra text possibilities – but of course they'll be an extra cost, for something being touted as complete in itself.

When one considers that the Plus/4 ostensibly has almost twice the user memory of the Commodore 64, and none of this is presumably taken up by the software, then the limited text memory is hard to understand, although of course it does have to be shared between the other programs. The ROM-based "View" WP program for the 32k BBC micro, for instance, offers the user 24,560 characters. Nevertheless, given the above caveats, the PR module is still quite powerful.

The Spreadsheet

From here it's all downhill, I'm afraid, because the word processor is the best of the four integral software modules available on the Plus/4. Not that the spreadsheet is no good, it's very fair; just that there are already more powerful programs available for the Commodore 64.

Again, memory is limited, but not drastically so: 50 rows x 17 columns, or a total of 850 cells, which would probably be enough for the average application. But the 2000 cells available on Practicalc for the humble 1K Vic shows it up somewhat. Because the column width is set at an unmodifiable 11 characters, this means that only three columns can be seen on the screen at a time.

Of course, the contents of a cell are not limited to 11 characters, but that's all that's displayed. Cell memory contents are limited to 36 characters.

Movement about the screen is rather awkward because the left and right cursors are used for moving inside the cell for editing. So movement to the left and right cell is by F1 and F2. But movement down and up still uses the cursor keys. Furthermore, it's not possible to enter text or a value into a cell by just moving to the next as with most spreadsheets; you have to press Return first.

Formulae are calculated using a strict left-to-right priority, so you can't assume that the normal Commodore priority rules of multiplication or division before subtraction or addition apply. For example 4-2*10 will give you 20, not -16. Brackets are not supported, so it's necessary to break complex formulae into simpler commands, spread over more than one cell.

Commands cannot be entered with a single-letter keystroke in most cases. Nor is there any kind of menu of options normally offered by most spreadsheets. However, the fact that commands may be up to six characters long allows the system to accept **FORMAT** or **FRE**. The latter 'freezes' a cell to protect it, (the opposite is **THAW**, of course!).

Splitting the screen

Undoubtedly the thing that will attract many users to the Three-Plus-1 software is the ability to split the screen between WP and spreadsheet, and it's really quite easy.

In the middle of word processing, the command **CBM-C** followed by **TC** will bring the spreadsheet to the screen, and files can be LOADed in with the same **CBM-C LF** command that's used in the other programs. Then, **CBM-C HA** will split the screen, and if you move back to WP with **CBM-C TW**, two can be viewed at the same time. The screen split can be unsplit from within the spreadsheet with **CBM-C FU**.

Data can be transferred from spreadsheet to WP with the **CBM-C MAP** command, after first positioning the spreadsheet cursor at the beginning of the data to be MAPped. Then, movement of the cursor up, down, left or right will copy the same data into your word processing text. If half-screen is in operation, this can be observed. Incidentally, all 36 characters of each cell will be MAPped in this way. After copying, the data can be edited using all the WP commands, since it is just text to the WP.

This seems to me to be the best way to print from the spreadsheet, since the **BLKMAP** printing command only transfers a maximum of 7 x 50 column/rows, and only the first 11 characters in each cell.

IFTRUE is a sort of IF...THEN command, which can also be used to modify the normal order of calculation, changing the contents of an earlier cell as a result of something found in a later cell (a dangerous proceeding, to be used with care, since circular calculations can result).

The equivalent here of '<>' (not equal to) is NTE. The program also supports NOT, but none of the other logical operators, like AND or OR.

In short, this is a simple yet effective spreadsheet, with a remarkable IFTRUE condition which not all spreadsheets have. But there are a few limitiations, for example, column widths are fixed at eleven characters. And that may soon have the experienced user fretting. Definitely for the beginner only.

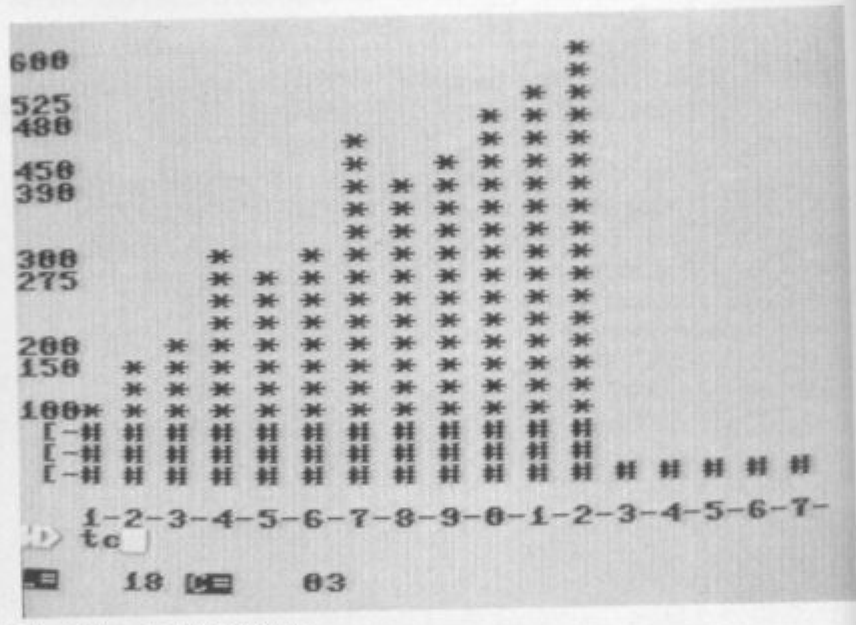
The Graphics

To call this a business graphics program is really something of an exaggeration. Most spreadsheets allow you to substitute a graphics character, usually '*', for integer values in the cells, though only one or two can cope with the difference between 2 and 2.5.

To produce a barchart of cell values, they must be arranged in rows, and must first be MAPped to the WP. Then the command **CBM-C GR** will change the WP values to columns of hash-marks. There are always a maximum of 20 vertical units, each with a value of 30. Again, since the barchart is now part of the WP document, it can be labelled or modified in any way required. But one wonders why they bothered with this so-called graphics option.

The File Manager

They were quite right not to call this a database, because it's not, even employing the rather loose terminology that has grown up in micro circles.



Plus/4 barchart graphics

It can handle records of not more than 17 fields, with a maximum of 38 characters per field, and a maximum of 999 records per file. For £16.95 a simple tape-based program like Beaver's Infotape will offer you records nearly five times as long, with all sorts of calculator and other facilities as well.

There is also no facility to design special screens for inputting or retrieving data, and since the field names are not displayed when records are retrieved, it's not always obvious what the data shown applies to.

Each record entered is numbered, and can be accessed by that number with the **CBM-C RCn**; command, where 'n' is the number of the record wanted. It is also possible to review the entire data file with the **CBM-C RVn**; command, where 'n' is the number at which the review should start. Records are displayed very quickly and may be stopped with **S**. with display resuming after the key is released. Letter **Q** abandons the review.

A search can be performed for a specific search string anywhere in the record. The program does not distinguish between capitals and lower case, and the search parameter must be confined to one field. So if surname and first name are in different fields, only one or the other can be accessed. For example, the search string SM will turn up Smith, Smithson, Smythe, or even Jasmine.

Sorting can be performed on up to three fields, and it's possible, using the WP, to print out reports, labels and suchlike, either from the complete file or selectively.

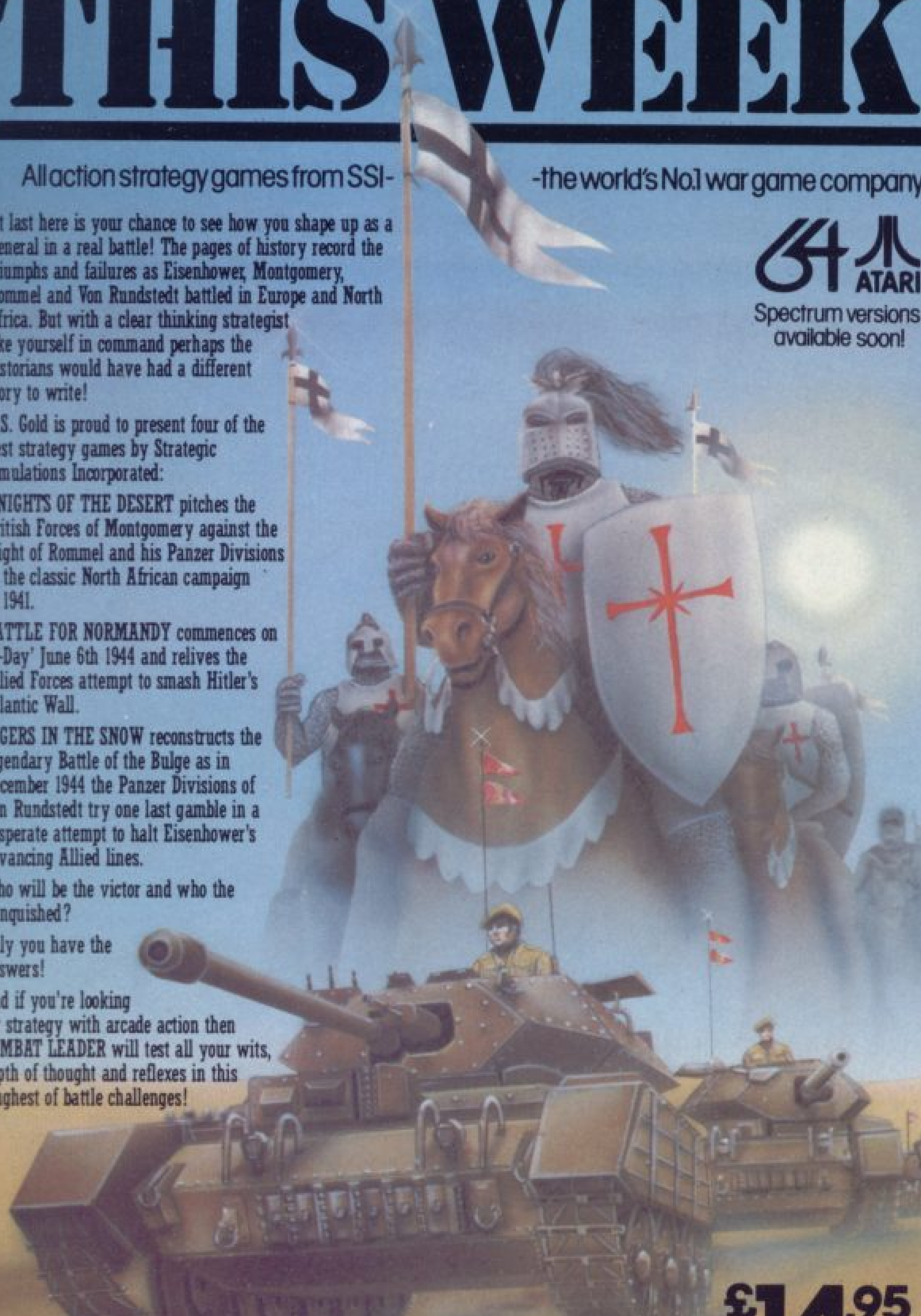
For small organisations, tennis clubs and the like, or very small businesses, the file manager would be a useful little utility – with the emphasis on that word little.

Conclusions

If I was more certain of the market this machine and its software was aimed at – or if I was more convinced Commodore had a clear idea of it – I might be able to attempt a better judgement of the Plus/4's potential. As I said last month, it's generally a nice and compact machine, but if its success depends on the power of this software, then I wouldn't fancy its chances of becoming a classic.

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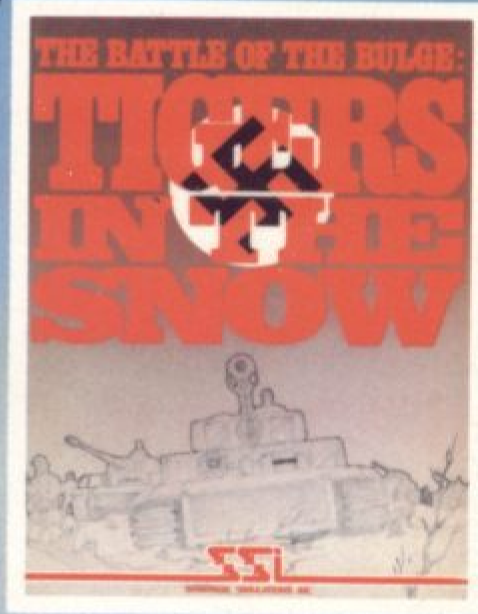
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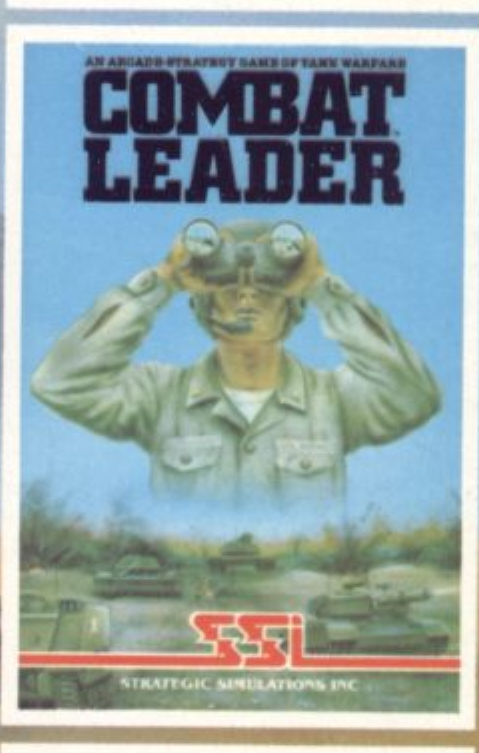
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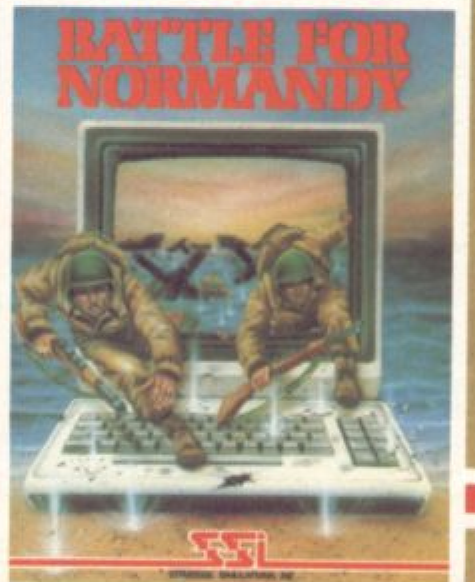
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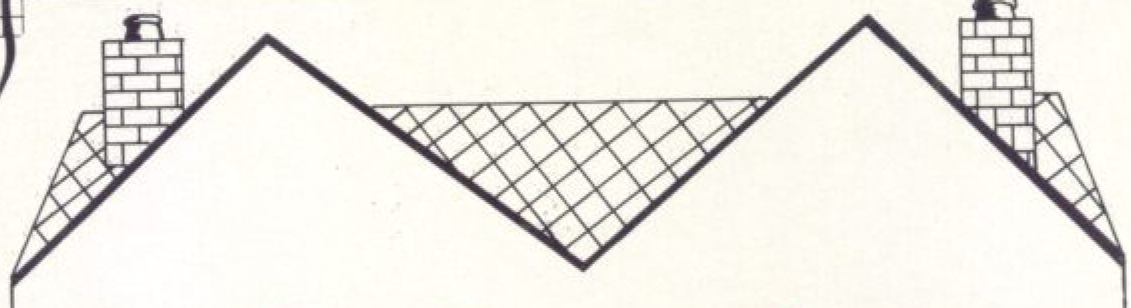
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Part three – control without wires

In the third part of our series we take a look at ways of controlling devices without using connecting wires. Chris Durham tries out a commercial control system that uses the house mains to send its signals and also investigates the wonderful world of ultrasonics and infra-red transmission.

So far in the series I've concentrated on ways of sending a low voltage signal to our mains interface along a wire. This of course means a lot of rewiring of your house if you want to do more than just control a device in the same room as the computer. Also, there are those who might like to control something mobile (a robot butler, perhaps), for which an 'umbilical' cable attachment is hardly suitable. So what is available that will allow us to control devices without any direct attachment between the computer and the device being controlled?

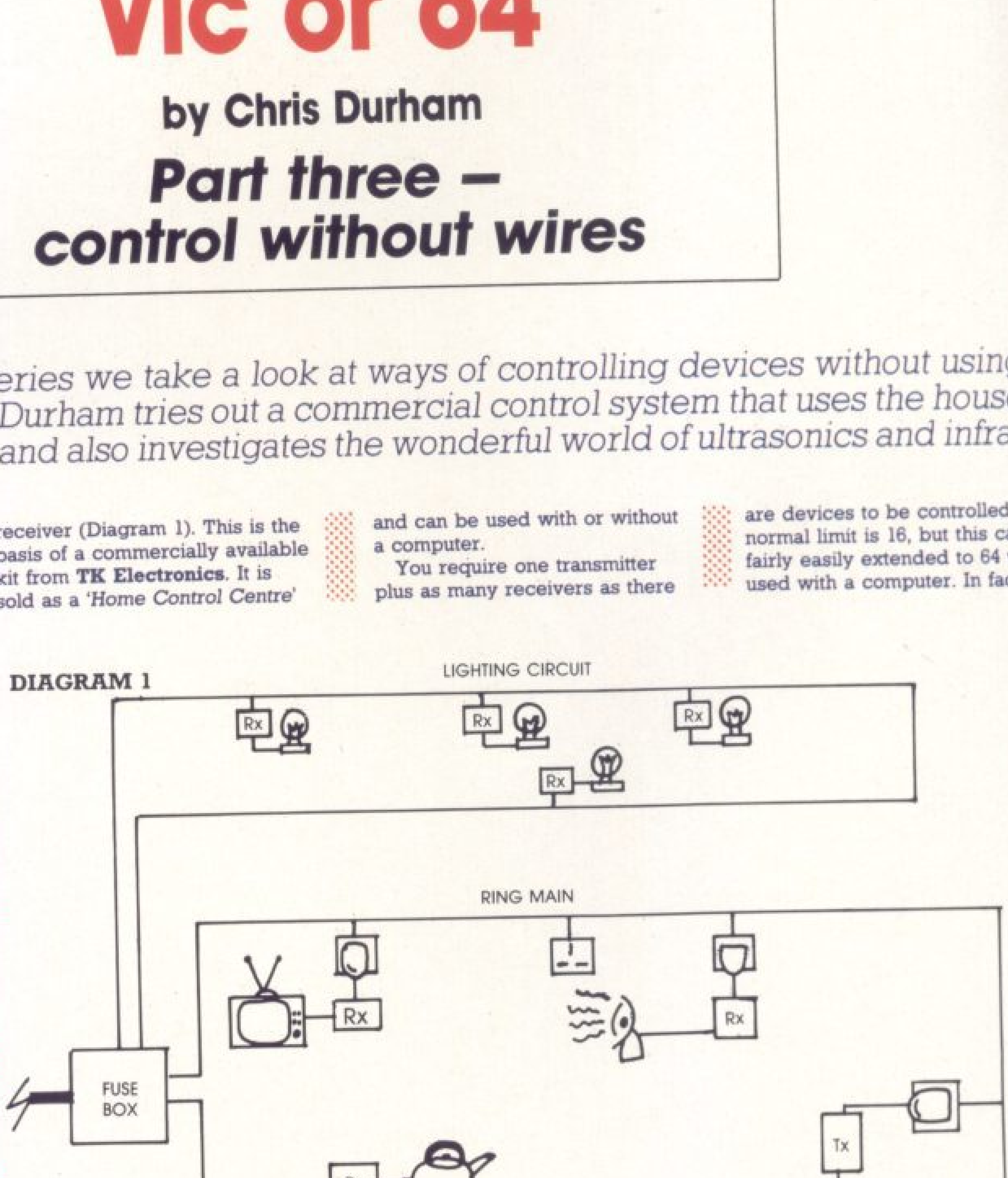
Mains-borne remote control

If you think about it for a moment you'll realise that there is already a system of wires going to every single electrical device in the house; the mains wiring. Obviously we cannot just connect our 5v signal to the mains; the result would be a rather blackened and melted computer for a start.

What we can do, however, is to transmit a high-frequency signal into the mains wiring and then filter off that signal at the other end with a suitable receiver (Diagram 1). This is the basis of a commercially available kit from **TK Electronics**. It is sold as a *'Home Control Centre'* and can be used with or without a computer.

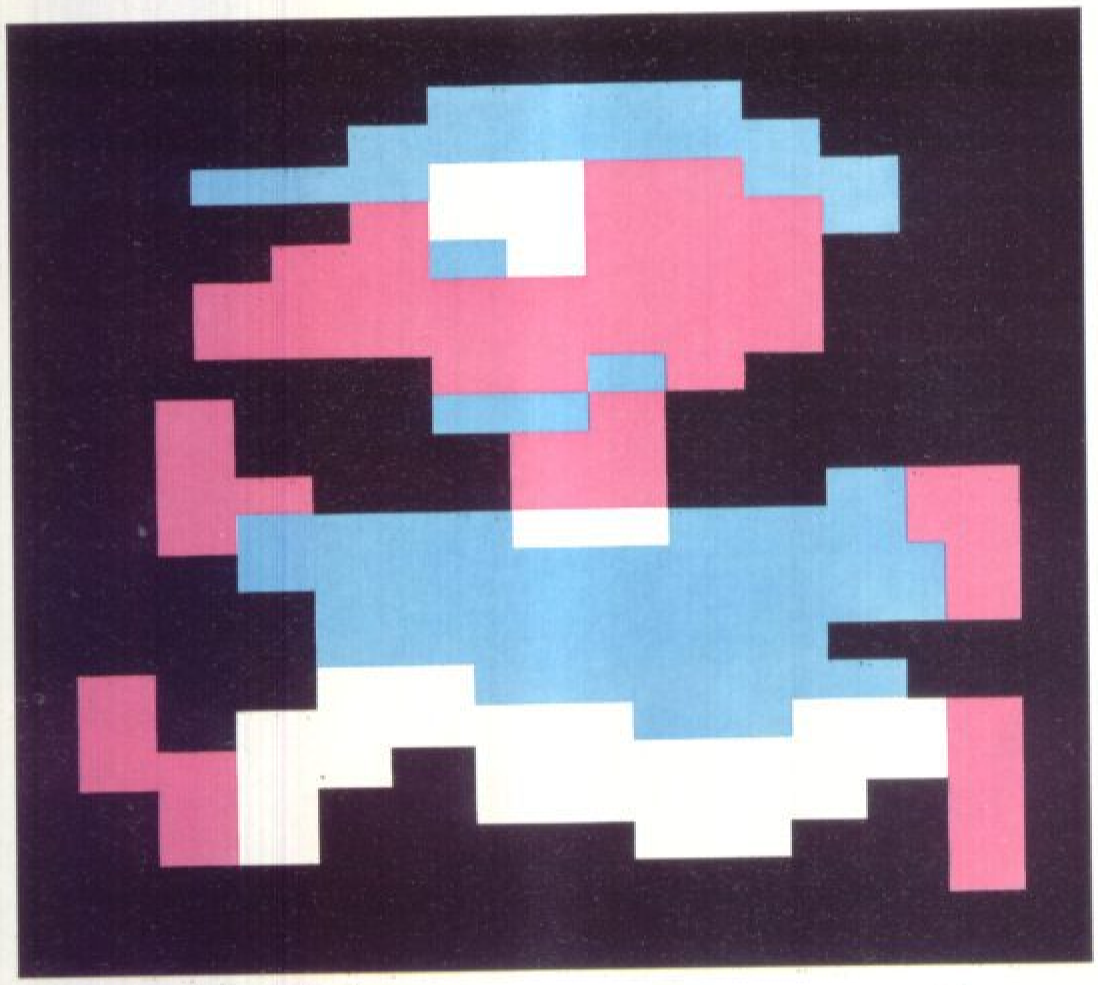
You require one transmitter plus as many receivers as there are devices to be controlled; the normal limit is 16, but this can be fairly easily extended to 64 when used with a computer. In fact,

DIAGRAM 1



(Tx = Transmitter, Rx = Receiver)

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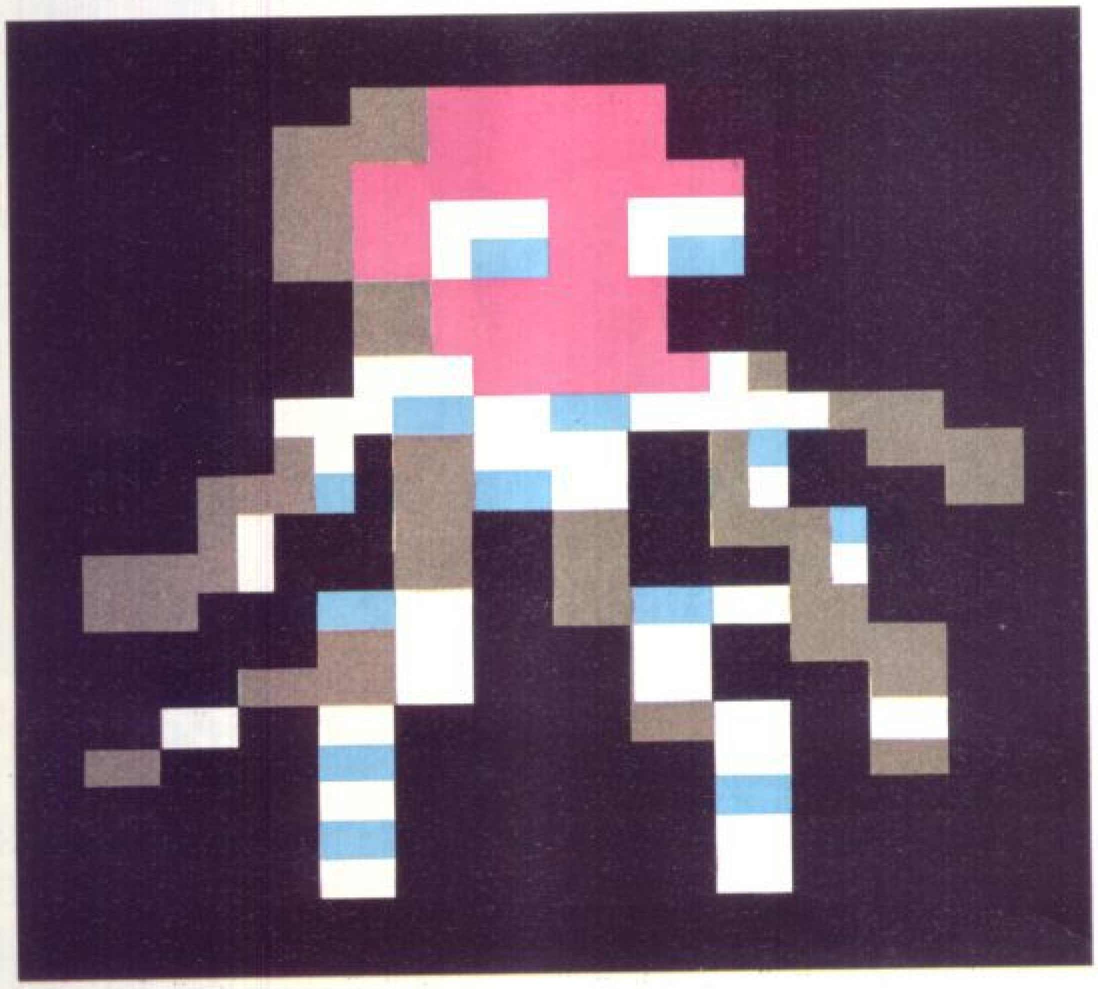
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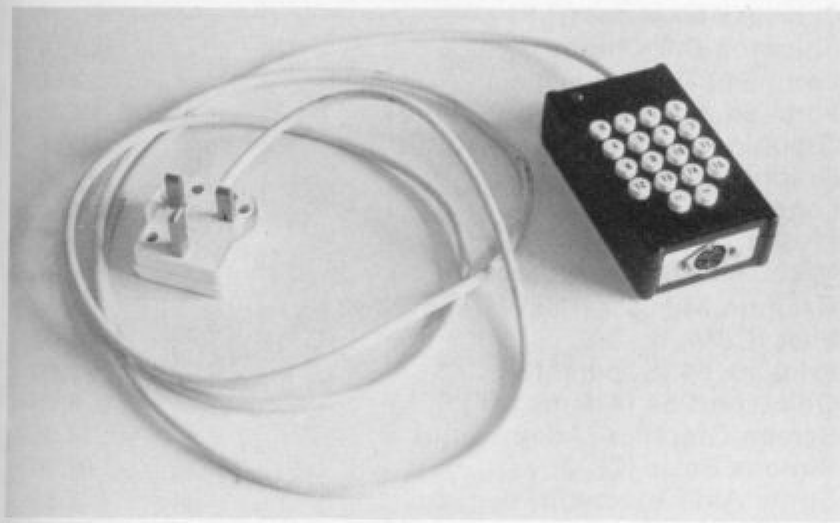


Photo 1 – the Transmitter and mains controller

with additional decoding circuitry it is theoretically possible to control up to 256 individual circuits. Both the transmitter and the receivers are in kit form; there are no versions available ready built. What you get for your £49 is one **Tx** (transmitter) and two **Rx** (receiver) kits.

Building the Transmitter

You get everything you need to build the stand-alone version of the transmitter including the case; but they don't include the five 680Ω resistors needed for the computer interface. This is because they say different values are needed for different machines. You'll also have to make up a cable with a 5-pin DIN plug and a User-port connector.

It took me about two and a half hours to build the transmitter including filing down the switches which are a rather tight fit on the PCB. Fitting the unit into the case however, took the best part of another hour! The case is only just big enough and could really have done with being bigger; if you don't get the fit exactly right you can short out components or jam the switches.

I eventually fitted a rubber grommet in the hole for the mains cable and this allowed the board to be positioned with the case closed and then kept there, otherwise any small movement of the cable caused the switches to jam; the unit is not secured in the case in any way. If you were not intending to use the manual keypad at all, it would be possible to leave off the keyboard and fit the unit in a totally different box.

The components were all listed in the instructions, but since there is no resistor colour code included, a beginner might have problems identifying which one is which. Actual construction is straightforward for anyone with previous experience of building kits, but again, beginners might have a few problems since everything is so tightly packed together. The keyboard is on a separate PCB which is mounted above the components PCB by soldering wires between the two boards.

Building the Receiver

This is slightly easier than the transmitter for two reasons; there is only a single PCB and you can fit it into any case you wish, since one is not provided. This is because it is possible to fit the receiver inside the device to be controlled if so desired. I chose a different method which is to mount it inside a 'plug box' which plugs straight into the mains socket.

As with the transmitter, the components are all listed and the instructions are fairly detailed; there are one or two silly mistakes however which are rather confusing. For example, the Light Emitting Diode (LED) is marked as **D3** on the diagram, but **CQY40** on the components list, while the symbol on the diagram is incorrect! There is also a warning given about CMOS devices, yet they are packed in non-conducting foam (normally CMOS devices are stored with all pins at the same potential). Actual construction time was just over an hour once the components had all been identified and laid out.

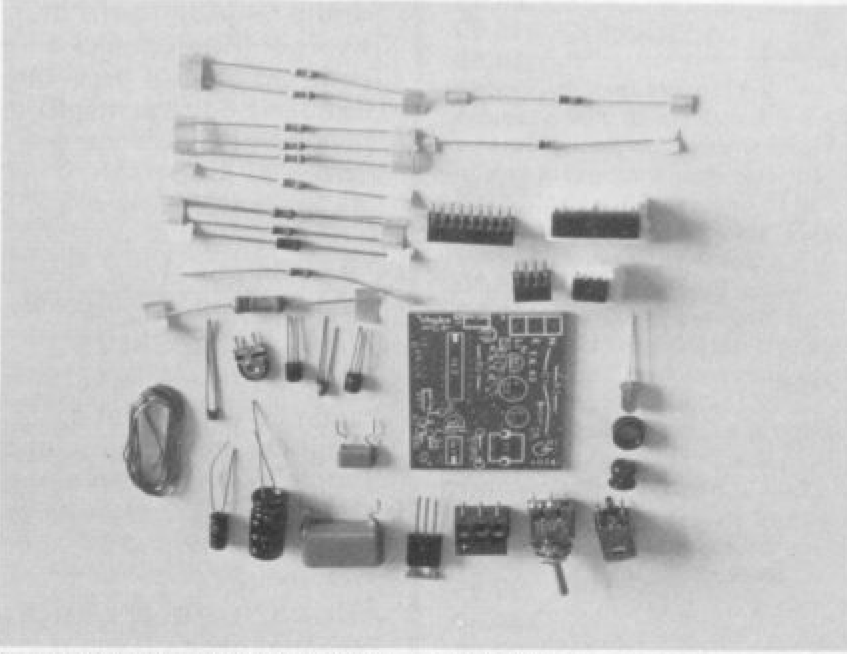
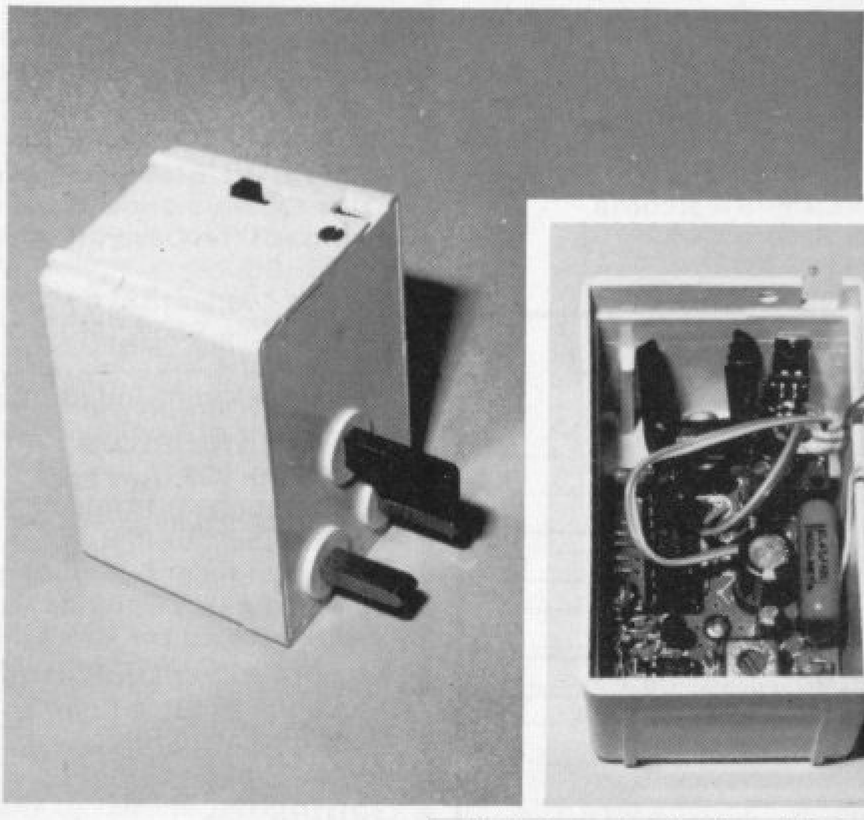


Photo 2 – the Receiver kit before construction

Testing the units

You need a multimeter for this since you have to adjust a transformer core on the receiver for maximum deflection on the meter. Although the instructions are clear, they do not give any indication of the *size* of the deflection; I could only obtain a maximum of about 0.6v and when the unit did not work as I expected I was unable to tell whether this reading was 'good' or not. I eventually had to resort to using an oscilloscope to find the fault, which is not an option available to many hobby constructors. The normal testing procedure is fairly easy, provided you have done everything correctly. If all else fails you can ring up the suppliers who are very helpful; they will even repair a unit which



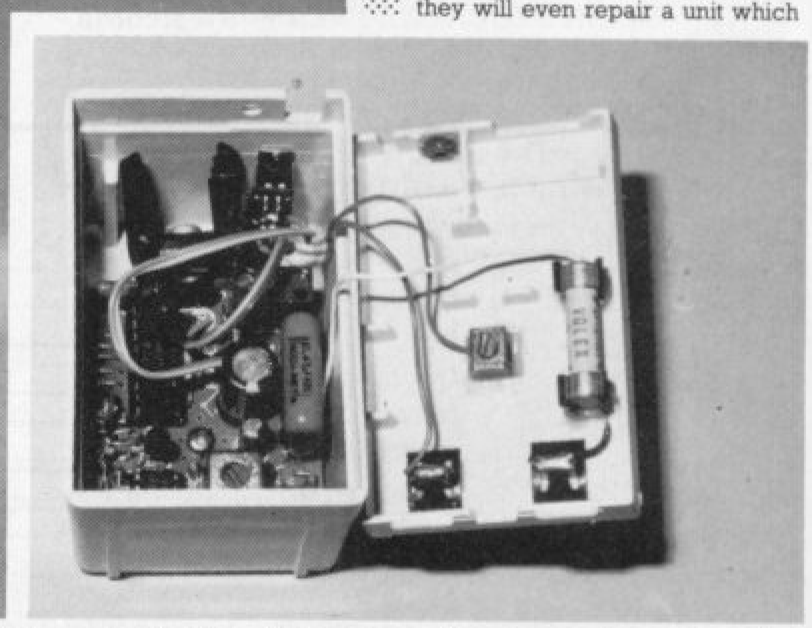


Photo 3 – mains plug-box with Receiver unit installed

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9	Hi-fi
10	Reading lamp
11	Radio
12	Kettle
13	Toaster
14	Washing machine
15	Microwave or cooker
16	spare

Table 1

fails to work, although you may have to pay extra for this.

Using the units

The instructions indicate how the units work. Basically the transmitter sends a high frequency signal, which is coded to give 16 different combinations, along the mains wiring. This is picked up by all the receivers, who filter the signal off the mains. However, only the receiver whose 'address' corresponds to the transmitted code will respond when the transmitter sends the next code which tells it whether to turn 'on' or 'off'.

Each receiver has four 'channels', but only one of these is used in the normal system; the user selects which channel is used by links on both the Tx and Rx PCBs. This is only a limitation on the manual system however and by using a computer on the transmitter and using all four outputs on each receiver it would be possible to drive 64 devices; the program coding would be a little more complicated, but not much.

To operate a device you must know the address of its receiver. With only one device per receiver it is just a question of POKEing that value into the User-port for up to two seconds, followed by the value 48 (binary 11000). Switching off is the same except that the second value is 32 (binary 10000). All 16 receivers can be operated totally independently and this should be more than adequate for the average house. **Table 1** shows the sort of control that could be achieved with a 16 receiver system. Since the mains wiring connects both the socket ring main and the lighting circuits the computer can be sited anywhere in the house, yet control any electrical device.

Applications

These are limited only by the imagination of the user, but an obvious one that springs to mind is making the house appear occupied when you are away. Lights can be turned on downstairs at the appropriate time, then later the landing light can be switched on, followed by the bedroom and bathroom, finally turning all lights off. You could even have the hi-fi going if you have a 'continuous play' cassette player. Some idle people might even use it to switch on their radio in the morning, boil the kettle, start cooking their boiled egg and turn on the toaster. Come to think of it, that's not a bad idea! But there are limits to this: the components, as supplied, will only handle about 1kW (a single bar electric fire). To operate higher rated devices such as kettles and cookers, you will need to purchase extra TRIACS and heatsinks of the appropriate rating.

Advantages

This system is neat, unobtrusive and can be used to control up to 64 devices with few additional components. The use of the mains to carry the signals means that no extra wiring is necessary round the house and receivers can be built-in to the devices they are controlling. The receivers can be packaged to suit the application.

Disadvantages

The system is not available ready built and is therefore not suitable for non-electronic hobbyists. Although the individual units may not seem that expensive, at around £12 for each additional receiver it would cost over £700 to implement a full 64 channel system. Even a modest 16 channel system would set you back over £200, assuming every single unit worked first time. However, where you can combine devices (house lighting for example) you may be able to combine channels on one receiver, thus reducing the cost.

Conclusions

This is an ideal system for someone who is handy with a soldering iron and who would like to bring his house into the age of 'computer control'. It is not particularly cheap, but then £200 might be considered by some to be money well spent on such a system. You can always start off with the basic kit at £49 and then increase the system a single receiver at a time. Do remember that it will tie up your computer totally and that you will have to make provision for power cuts and other possible disasters, all of which will push up the cost.

Ultrasonics – the mobile system

There are two types of system that can be used for control without using wires; infra-red and ultrasonics. Similar principles apply to both, but ultrasonics are sound-based while infra-red is light-based. An ultrasonic system tends to have a wider range than the infra-red because it is less directional; it can even work round corners if the conditions are right. An ultrasonic system works by sending out sound waves at about 40kHz; these are then modulated with a code. These modulated sound waves are picked up and decoded by the receiver. **Diagram 2** shows the basic components of such a system.

I originally intended to go into detail on building an ultrasonic transmitter and receiver. Unfortunately, there is one problem with all these types of system and that is setting them up correctly. While it is fairly easy if you have the right equipment, such as an oscilloscope, it is a little more difficult for the average hobbyist who has to make do with just a multimeter. Unless the system is set up correctly from the start the operation will tend to be erratic



Project

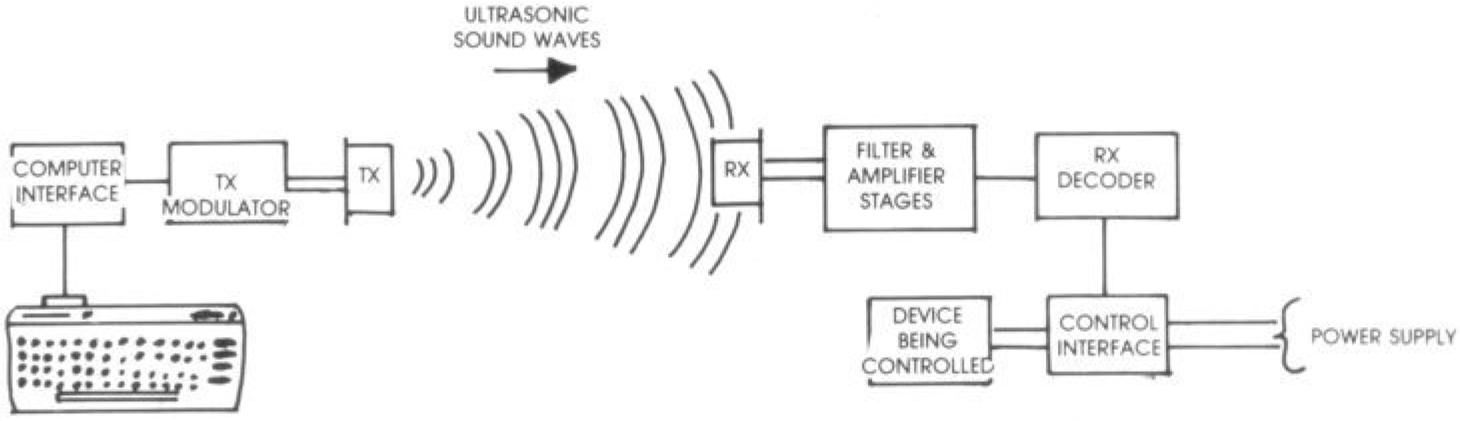


DIAGRAM 2



and the range will be considerably reduced. However, the project is not dead and should a simpler method of setting up be found, the details to enable such a system to be built may well be published as a separate article. In the meantime, anyone with the confidence or experience to go it alone can get a diagram of a typical receiver and transmitter layout by writing to **Commodore User**.

Applications of ultrasonics

For robotics control, it is possible to mount a transmitter and receiver at each end of the ultrasonic link to provide either full 32 channel working in both directions, using a master/slave protocol or 16 channel working with a different receiver at each end. This would enable quite sophisticated control since commands could be passed as control codes, followed by the distance or angle to move etc. Even simple commands like forward, stop, turn, could give an appearance of intelligent action if the robot were able to signal back if it hit an obstruction.

When used in a static environment the advantage of ultrasonics over a mains-borne system is that it can be used equally well with battery operated equipment. The transmitter circuit can also be powered from a 9v battery, allowing the devices to be operated from a hand-held control unit when the computer is not connected, in the same way as a TV remote control unit.

Commercial units

Despite the apparent proliferation of ultrasonic systems in most of the electronics magazines, there is a lack of ready-made units for control purposes. There may be units available for burglar alarms, but these have a different function. They merely detect any change in the received signal to indicate movement or the presence of an additional object in the guarded zone. Unfortunately it is not easy to convert these as the devices do not have the means to modulate the signals in the way we want.

Some of the latest 'turtles' to appear, such as the one from Valiant, now use remote control units; the Valiant turtle uses an infra-red controller that plugs into the User-port on the Commodore 64. It may well be possible to convert that unit to control other devices in your home.

Drawbacks of untrasonic systems

Because it relies on sound waves travelling through the air there are certain limitations to this type of system. Any obstruction between the transmitter and receiver may cause the link to fail, although at close range with a small obstruction there may not be a problem. Reflections from walls, for example, can sometimes increase the strength of the signal and sometimes reduce it. This is not likely to be a problem inside a room as ranges will be well within the maximum, but if used outside, the effective range can vary considerably.

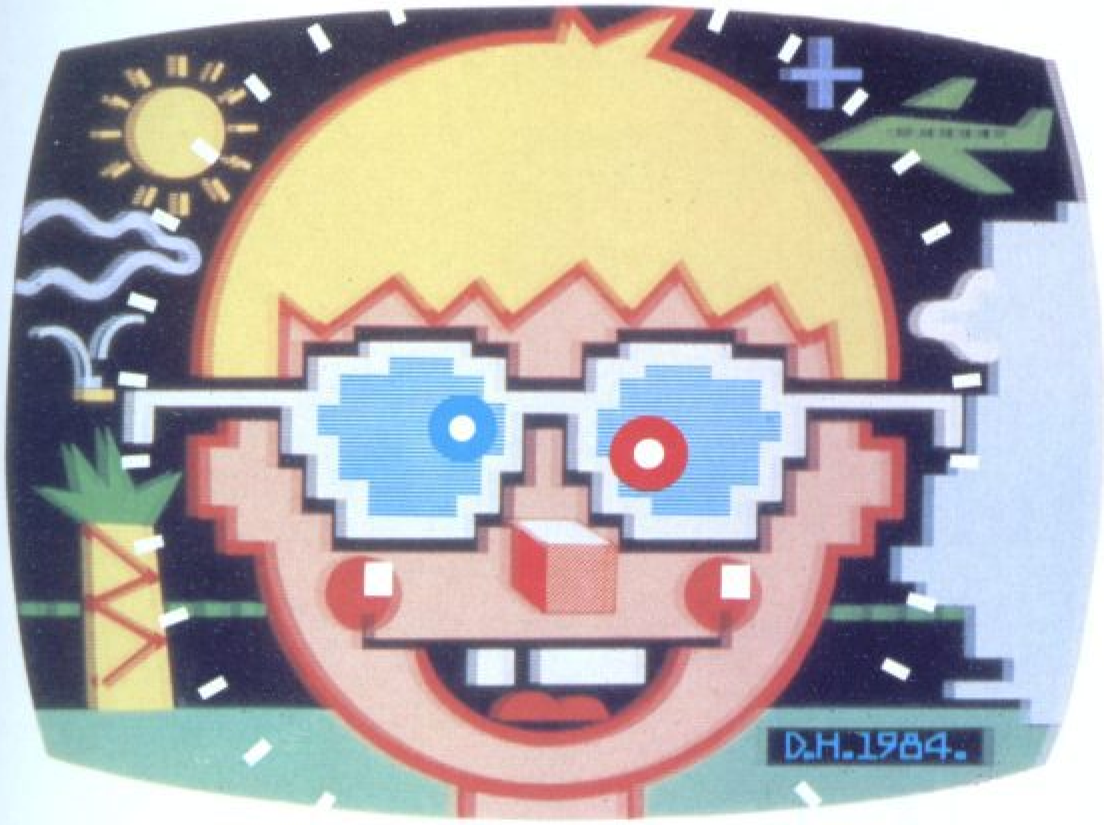
The maximum range of a typical domestic system will be about ten metres, depending on the conditions under which it is used and how well the Tx and Rx units have been set up.

One point to bear in mind if you're trying to control a mobile device; you need to have some method of knowing when the receiver is out of range. if you reserve one of the 32 codes as a 'confidence' code, this can be transmitted once every second, for example. If the on-board controller misses more than two consecutive confidence codes then it stops the device (or even better, reverses until it comes back into range!).

Feedback

So far in the series we have looked mainly at how the computer sends signals to a device under control. Next month we take a look at the design of a basic input board that will allow up to four input channels to return information to the computer. I will also be taking a closer look at VIC REL which has both input and output channels in one easy to use cartridge.

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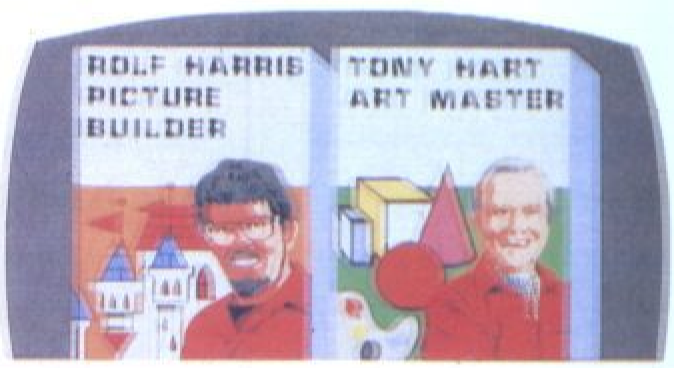
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A professional synthesiser for your 64?

Musicalc reviewed

by Nick Pickett

Musicalc, from the American Waveform Corporation, was left out of last month's review of music-making programs for the Commodore 64 because it's the most powerful, versatile (and most expensive) package yet available for that machine; its sophisticated facilities require a more lingering look. It comes in three basic modules: a Sequencer and Synthesiser, a Scorewriter and a Keyboard Maker, together with a range of disks that provide preset rhythms. Nick Pickett, himself a dedicated computer musician, puts the complete package through its paces.

Musicalc is a series of disk-based programs which set out to exploit the full sound generating possibilities of the Commodore 64. There are three basic modules. Musicalc 1 is the synthesiser and sequencer; it forms the basis of a system that can be expanded to include Musicalc 2 (Scorewriter) and Musicalc 3 (Keyboard Maker). UK prices for those are £49.99, £34.99 and £34.99 respectively. Musicalcs 2 and 3 will not work independently of Musicalc 1.

A fourth module, an actual music keyboard, should soon be available from the UK distributor, Musicalc UK, which is also converting Musicalc 1 into cartridge form. Three template disks are available too, which provide jazz-funk, West Indian, electro-pop and drum rhythms. Those cost £19.99 each. For demonstration purposes, Musicalc UK is offering a Demo disk (£6) and a cassette (£3), the price of which is deducted from an eventual purchase. So let's load up Musicalc 1, the starting point for building the sound system.

Musicalc 1 - synthesiser and sequencer

Musicalc 1 is the heart of the system and provides a basis from which the other modules work. It comes with a well presented 72 page manual. On booting up the disk, a display panel appears on the screen which is divided up into two sections. On the left side is a display showing the current status of the sound synthesiser. On the right, there's a moving display of the music sequence in memory (picture 1).

A good initial feature of Musicalc is that it holds up to 32 music 'scores' and a file of short, preset demonstration scores which load automatically when you load the disk. So it's easy for you to dive straight in and experiment with sound set-ups on existing scores. The same goes for the manual; it begins by letting you do some easy experimenting without actually explaining what is going on - that comes later.



The synthesiser status display is quite comprehensive, showing on/off switches, 'slider' controls and the following parameters for each voice: waveform, ADSR (attack, decay, sustain, release), pulse width, filters and volume. You also get slider control over oscillator and envelope modulation, and the tempo.

Musicalc can hold up to 32 separate sounds at any time, which are loaded with the program so that you can hear them all immediately. You can set your own sounds up, of course; they can be easily saved to disk for future use.

Control over the switches and sliders on the synthesiser panel is really quite simple. You select switch control by pressing the left/right cursor key, and slider control by pressing the up/down cursor key. Then, you select the switch or slider you want to adjust by pressing the appropriate 'qwerty' key.

The manual gives clear instructions on locating and controlling each sound parameter, but it's easy to locate the slider or switch you want because it flashes when you press its control key. If you select a slider control, pressing the four Function keys gives you up and down movement in both steps and slides.

Sequence of notes

To build a sequence of musical notes, you must go to the second of Musicalc's three displays (press SHIFT/RETURN); that's called the Score Screen (picture 2). Musical data is entered in rows, the length of which can be specified by the user. The maximum length of a row is 16 steps and only one row appears on the screen at a time.

At the bottom of the screen, you select the octave from an eight-octave range. At the top, you select one of the twelve semi-tones of that octave. That's done simply by using some of the 64's keys, and you can hear immediately the pitch of each step selected. Notes can also be tied together using the space bar. For example, you could tie two crotchets to make a quaver.

Given that each step in composing requires both the note and its octave, entering

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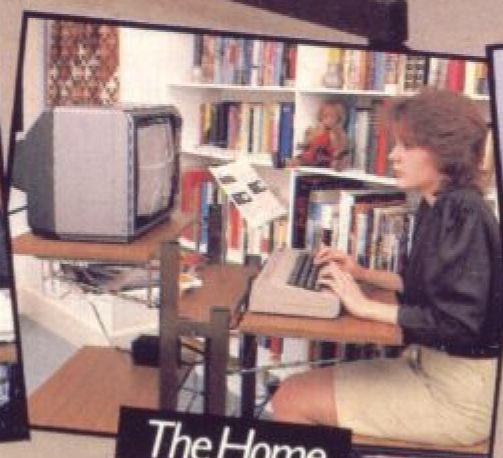
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notes can be time consuming. It took me over a minute to enter a C major scale running up and down in 16 semi-quaver steps. Entering a tune, followed by the maximum of three part harmony or counterpoint involves hours rather than minutes. Perhaps I'll get better with practice.

Playing the piano

Musicalc 1 also turns your Commodore 64 keyboard into a sound keyboard. The manual claims the keys act like a piano. Not quite; when you press a key, the sound continues until you hit the space bar. Despite that, it does give you an alternative method of entering notes. And you have a choice of three modes.

The first mode lets you choose one of the three voices; so you can play along with any of the preset tunes. The Step Mode lets you correct any one step in the sequence, whilst Record Mode records any key pressed into the current row. It won't tie the notes, though. To make a crotchet from four quavers, you still have to go back to Sequence Mode and tie notes in the usual way. This rather defeats the object of the facility. Rows can also be cleared by pressing the space bar as the voice cursor moves across it.

Musicalc 2 – the scorewriter

Musicalc 2 is a scorewriter program which turns the compositions you've created within Musicalc 1 into musical notation. It can then be printed out on to paper as sheet music on a dot matrix printer. Unfortunately at present, your work must be printed to a Commodore 1525 or 1526 printer. Musicalc UK is working on a routine that will allow you to interface to a wider range of non-Commodore models.

The print facility can handle up to eight score pages at a time, and will print up to three voices on the stave. And you can distinguish between the different voices on the screen by using different colours. But before printing can begin you must tell the computer what the time signature is. Each sequence step is then treated as a semi-quaver. Printing starts from any measure in your score, so that if you've already printed part of the score, you can carry on from where you left off.

The Scorewriter looks like being a useful aid to learning the relationship between notes created on the keyboard and their position on the stave. And it shows some of the potential uses a micro has for musicians. But it has some drawbacks, notably the lack of clefs, key and time signatures. The range of time values only extends from semi-quavers to semi-breves: there are no triplets, no double dotted notes, no tie or phrase marks and you cannot change the time signature within a composition.

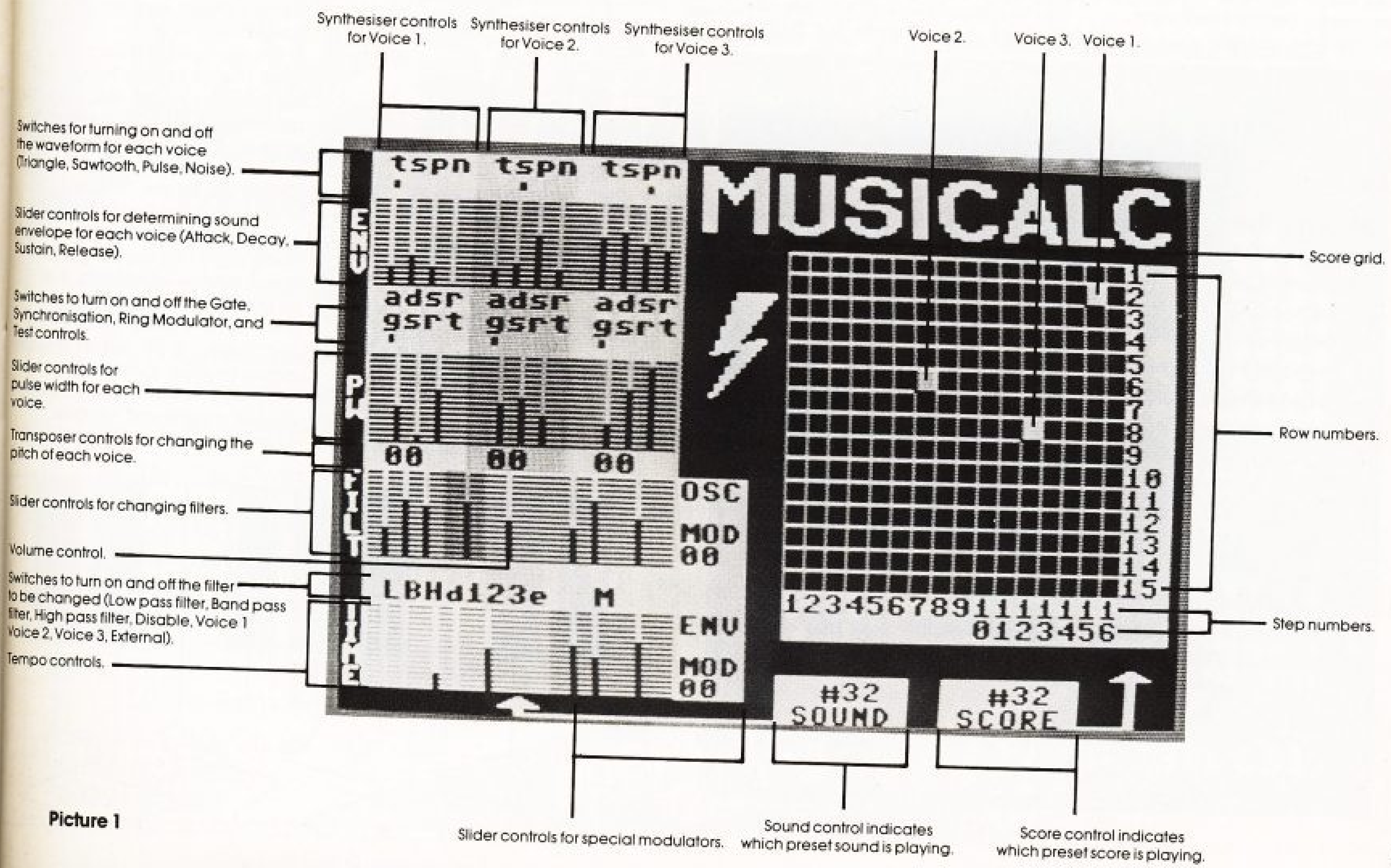
More facilities

Despite being advertised as a scorewriter, Musicalc 2 has three more programs unconnected with musical notation. Strangely, these bonus facilities aren't actually advertised. That highlights another of Musicalc 2's deficiencies; there is no written documentation and the scorewriter is barely mentioned in the Musicalc 1 manual. Admittedly there are two dozen 'help' screens in the package (and Musicalc UK is in the process of producing some written material). So it's only by exploring the contents of the disk that the user stumbles upon the extra software.

First, there's List Maker. That lets you create a list of instructions for changing sounds during a musical sequence — a very useful enhancement to Musicalc 1. Each instruction is a set of numbers that can change the current synthesiser 'patch'. A list is made of up to 64 segments, each of which contains five numbers to control the following parameters: score preset number, sound preset number, number of loops, jump out row (bar) and jump out step.

The second program is called

REFERENCE GUIDE TO MUSICALC PANEL

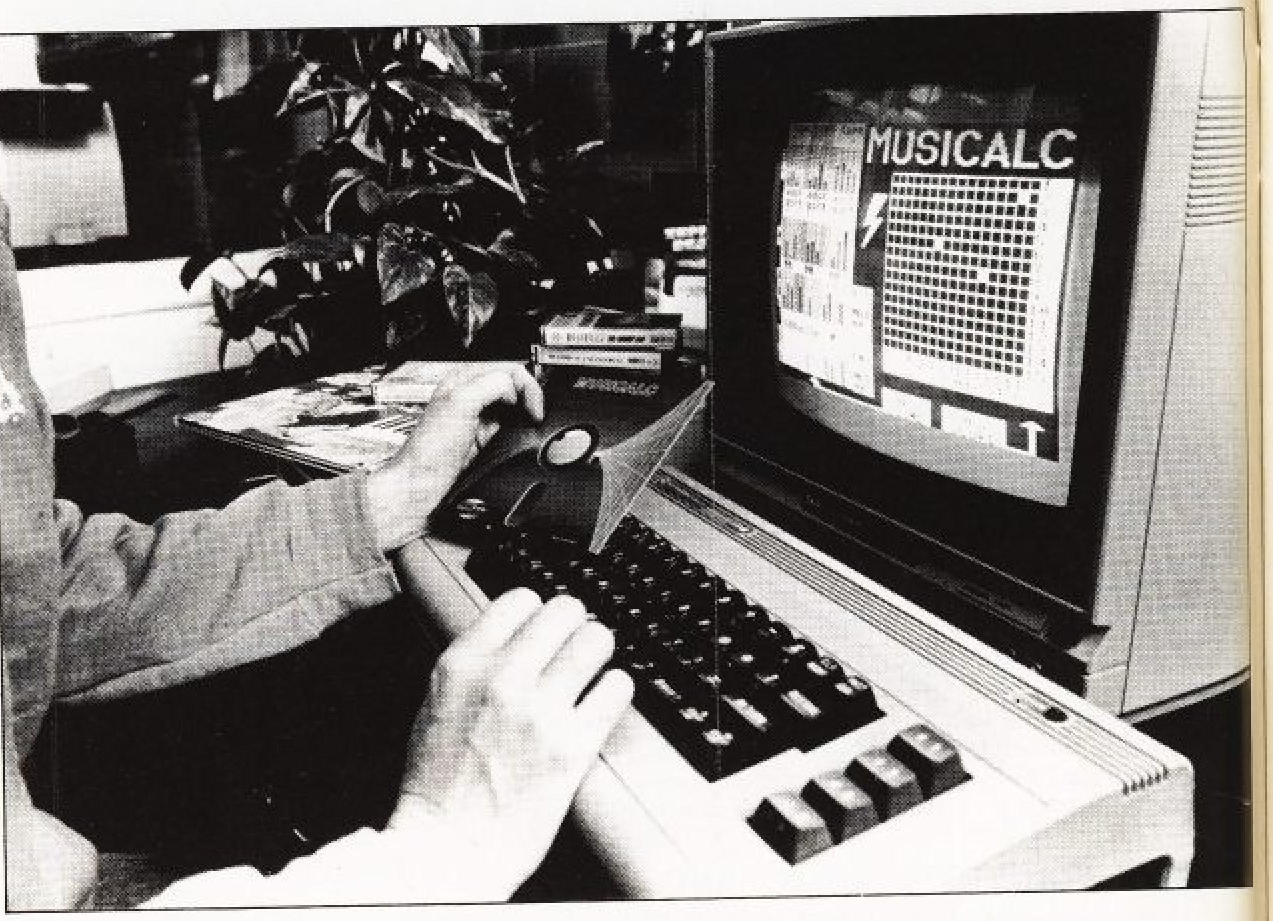


Picture 1

E. Sequencer. That's used to play through the list you've created, following the instructions as it goes. Musicalc 2 also supplies a sample preset score and sound file to give a demonstration of List Maker's potential.

Finally, there's a useful program called E. Sync which enables you to synchronise the output of Musicalc 1 to an external drum machine or synthesiser. You can even hook up another Commodore 64 and load Musicalc 2 into that, so that you can have six voices at once. The possibilities are only limited by your imagination.

You can also work the other way round and synchronise the output of the external sound generator to what Musicalc 1 is playing. But you must ensure that the external clock signal is not too slow — a device sending 24 pulses per event will work well. The Commodore 64 running Musicalc sends (and expects to receive) pulses at standard TTL voltage level. Unfortunately, E.Sync gives no information on how to connect external musical devices to the Commodore 64, but simply tells you to look at the connector pinout information in the 64 User Manual.



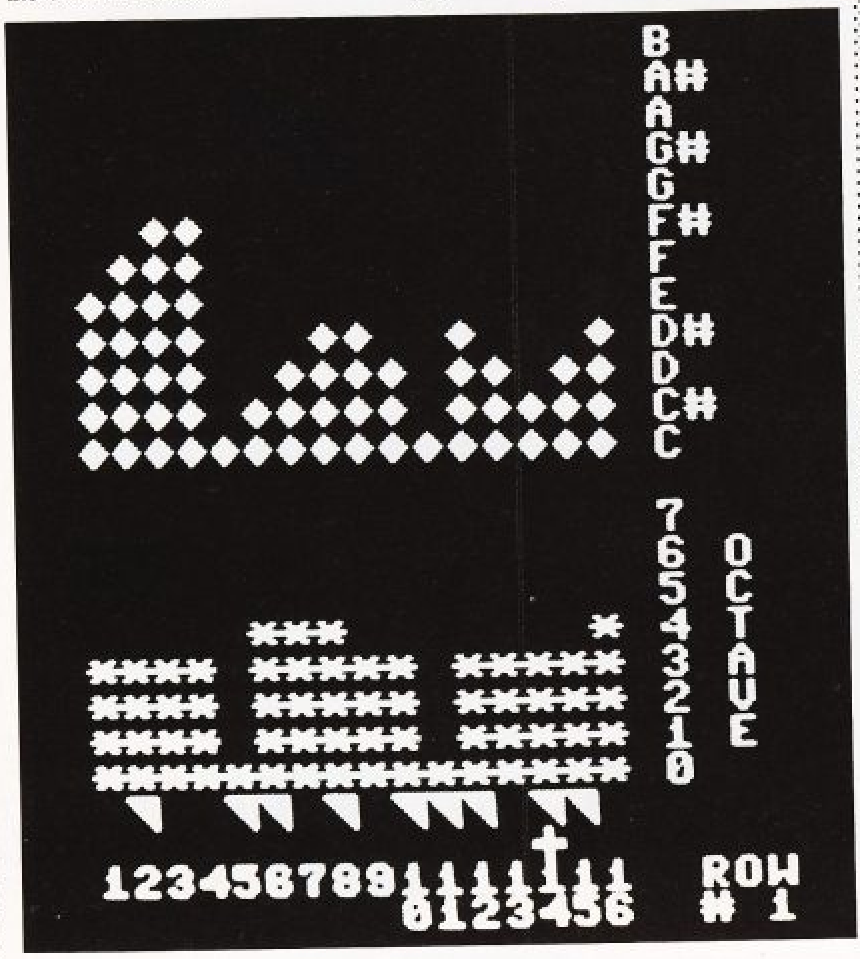
Even if what's been said is baffling to those of you who are new to synthesisers and hooking them together, you'll realise that Musicalc offers a great deal of potential in this area. But it's amazing that Musicalc is unable to tell you more about these first class facilities, or to provide written instructions on how to exploit them.

Musicalc 3 – the keyboard maker

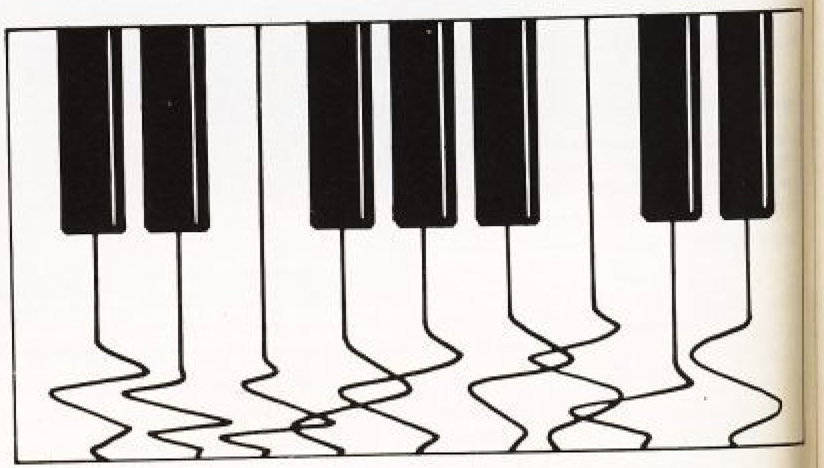
This last major component of Musicalc enables you to design your own musical keyboards using the Commodore 64's own 'qwerty' keyboard. That, in turn, can be used to input musical data into the Musicalc sequencer. You're provided with a screen display showing a cut-down four-row 64 keyboard. In this mode, pressing any of the keys in the range moves a cursor to the corresponding position in the diagram.

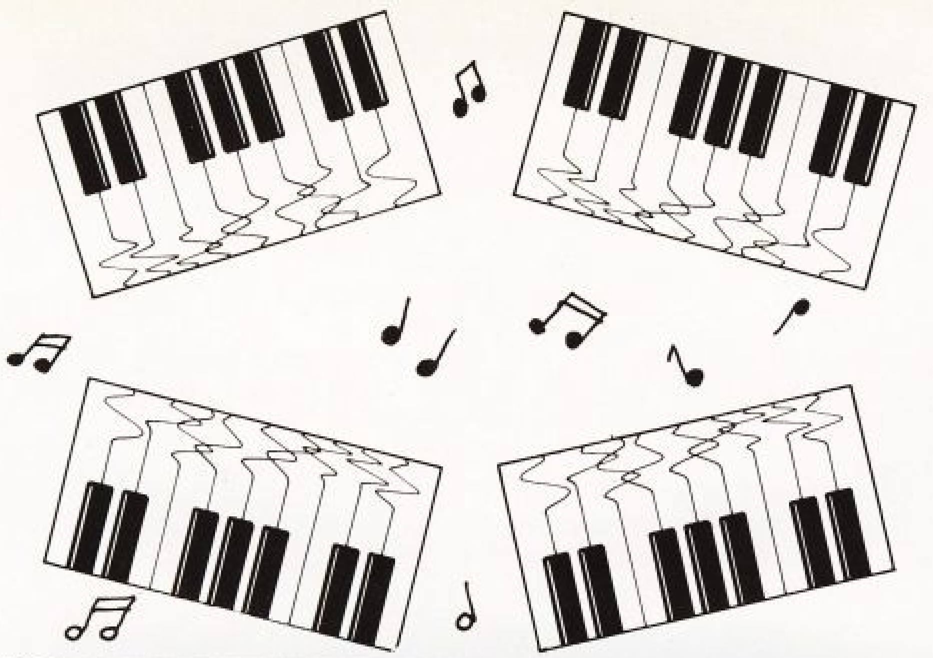
You can now program a note to be played by that key using the Function keys 1 and 7. Those respectively raise or lower the pitch in semi-tone steps. F1 and F3 are used in the same way but control the octave.

This is a very flexible and useful piece of software because it lets you program a keyboard to suit your requirements. For example, you could program rows 2 and 4 to be 'white' notes and 1 and 3 to be 'black', thereby giving yourself a chromatic keyboard. Or perhaps you'd like to play strange and obscure scales?



picture 2 – the score screen





The program also offers facilities to transpose a row of keys, the whole keyboard or to copy from one row to the next with relative pitch changes. And all your keyboard creations can be saved on to disk. Despite all that, the response from the actual keys is too slow to make 'real-time' playing feasible.

Still, the Keyboard Maker's function is to enhance Musicalc 1 and, in that respect, it works very well. As with Musicalc 2, there is no manual but there are around three dozen 'help' screens, which would make some written material desirable.

One more gripe is that although we're told that Musicalc 3 requires Musicalc 1 to work, there's nothing in the Musicalc 1 manual to tell you just how it all works.

Conclusion

There is no doubt that these Musicalc programs provide the most comprehensive exploitation currently available of the Commodore 64's music generating capabilities. In particular Musicalc 1, the mainstay of the system, which offers easy to use synthesiser and sequencer controls, a good graphics display and a full and informative manual.

Musicalc 2, though, desperately needs a manual, and I found the programs on the disk which are not advertised of more practical use than the Scorewriter itself. Musicalc 3 also needs a manual, but it's still another useful enhancement to the basic package. It should be said that Musicalc UK is working on documentation but none is available yet.

Nevertheless, the biggest drawback to the system is its cost. If Musicalcs 1, 2 and 3 are bought together with two template disks, the bill comes to a whopping £160.

Under review	Musicalc
Description:	Sound synthesiser for the 64
Supplier:	Musicalc UK
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Telephone:	01-241 2448
Summary:	Most comprehensive synthesiser package currently available for the 64
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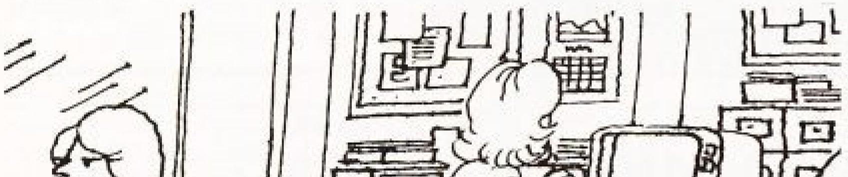
Part Two

Improving data entry

by Chris Preston

You may know what your programs are supposed to do, and you may know how they're supposed to do it. But you can't assume that everyone else will automatically share your insights.

This series, by professional programmer Chris Preston, shows you how to make the best use of the computer – and your programs. And 'best' in this case means 'most helpful' or 'most comprehensible'.



GIVE EXPLICIT ERROR MESSAGES

So on to the subject of data entry screens, and this is where the real work begins for the programmer. But before all you lazybones start to whine and turn over to the next article, remember this: once a subroutine has been written, you can use it again and again and again. And while it may cost you a few extra hours to write in the first place, thousands of grateful users will thank you for it!

Hands up all those who use the INPUT statement. Shame on you! The *only* statement you should even think about is GET. Preston's First Law: **With the INPUT statement, BASIC is in control and the poor user suffers.** If you use GET, you can make it really easy on the user by not letting him or her make mistakes.

How can you do that? Well, let's start with a simple Yes/No decision. You might write:

```
1000 PRINT "IS THIS DATA CORRECT";:GET A$
```

Tut tut. After all I've said about making it easy for the user.

● ***Rule 1: Give the user a clue***

If the user tries to answer 'YES', for example you will have an E and an S in the keyboard queue waiting for the next GET statement. Far better to say *exactly* what you want:

```
1000 PRINT "IS THIS DATA CORRECT (Y/N)";
1010 GET A$
```

This tells the user that he or she needs to press only one key. Similarly when asking for the date tell the user whether you want 310883, or 083183 (US format), or 31/08/83, or 31 AUG 1983, or whatever format your date validation routine expects. Of these various options, incidentally, 310883 is probably the best because it involves the fewest keystrokes. It's a trade-off between that and the meaningfulness of another format. But don't forget that your user may not be an expert typist – do be gentle!

● ***Rule 2: Don't let the user make mistakes***

Having got the data we can now verify it:

```
1020 IF A$="Y" OR A$="y" THEN 1250
1030 IF A$="N" OR A$="n" THEN 1100
1040 PRINT CHR$(7): GOTO 1010
```

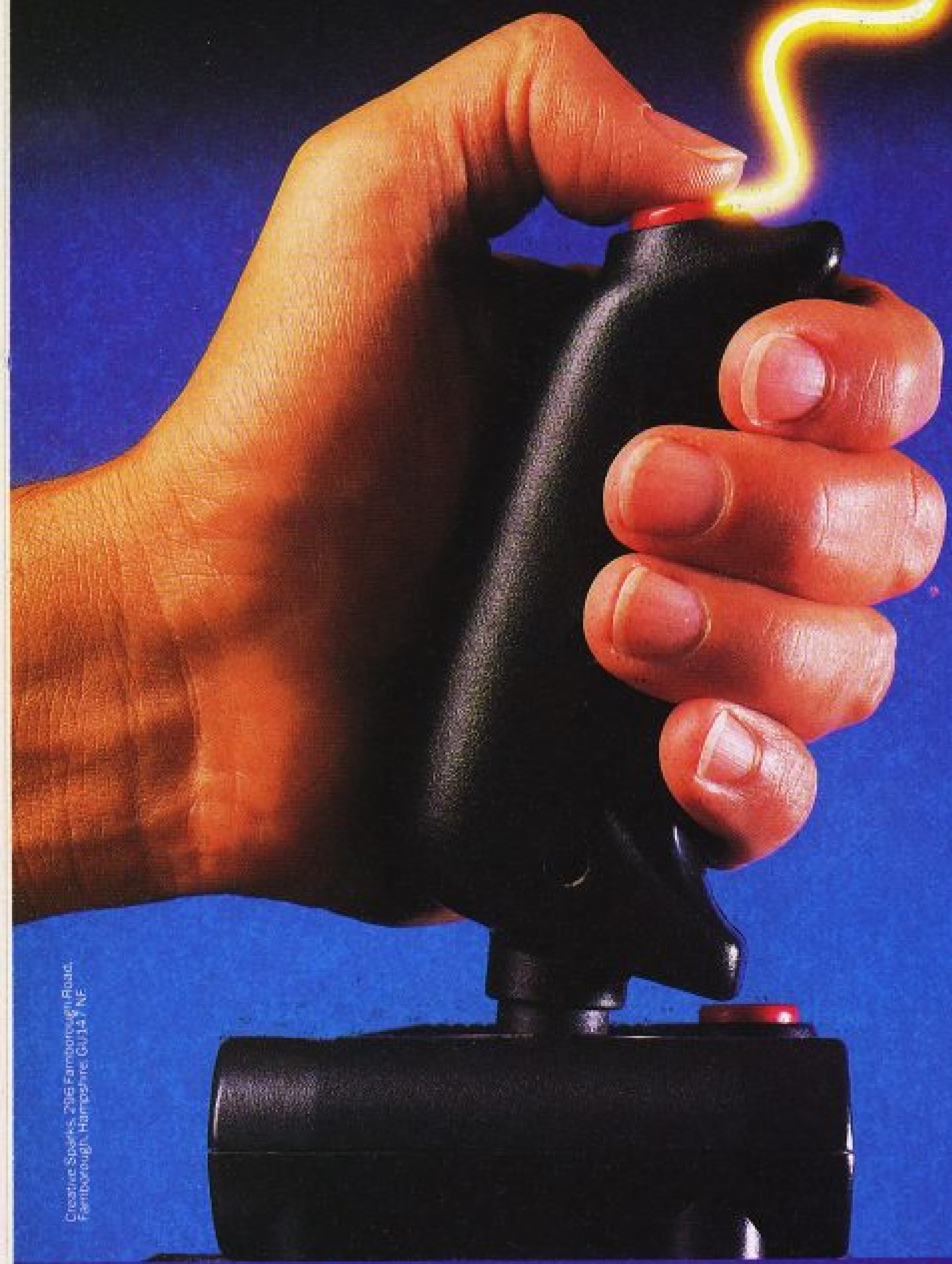
By using the GET statement, and testing only for the keys we want to use, we can apparently lockout all the other keys on the keyboard. If our fumbling user misses the "Y" key and hits the "T" instead, he or she is brought to a halt by a squeaking noise from the computer (We'll expand on this method in the next article to show how to build up a subroutine that can replace the



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Name

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CU1184

INPUT statement).

The PRINT CHR$(7) in line 1040 just sounds the internal bell on most Pets; Vic and 64 owners can easily write a little subroutine to use the noise generators.

Rule 3: Allow upper and lower case characters

Notice that we allow both "y" and "Y". Our user may be holding the shift key down after keying some data previously – learner typists often hold keys down while they are thinking what to do next, and so do expert typists who are used only to manual typewriters. Or the shift lock key (if there is one) may accidentally have been knocked on. In any case we can save our user a lot of trouble by allowing either shifted or unshifted characters – note that this also means that we should accept "!", and so on.

Rule 4: Validate all data as soon as it is entered

If you have a screen with seven or eight fields on it, validate every field as soon as it is entered and tell the user *immediately* if there's a mistake. Do not leave it till the end and then force him or her to go back again.

For example, if the user is keying in the readings from a laboratory experiment and you know each one should lie in the range 50 to 150, you can easily check that. If the user enters "15" you should stop and point it out immediately – not five minutes later, when anyone would have difficulty finding that reading again. The eager scientist may have thrown the paper in the bin. And if you are tempted to say, "Serves him right", remember Preston's Second Law: **Don't let the user make mistakes.**

Rule 5: Give explicit error messages

Error messages should do more than just tell the user a mistake has been made. They should say exactly what the mistake is and if possible what to do about it, and then give him or her a chance to correct it before carrying on. In this case the error message should not just say "INVALID READING" or even "VALUE TOO LOW", but "VALUE SHOULD LIE IN THE RANGE 50 TO 150" – and maybe even add "YOU TYPED '15'".

Many errors relate to peripherals such as printers and disk drives – examples are "PRINTER OUT OF PAPER" and "FILE NOT FOUND". In cases like these, don't just print the message and force the operator to run the program again from scratch. Give users a chance to put some paper in the printer, or to change the disk for the right one, and then try again. For instance:

PRINTER IS OUT OF PAPER. PLEASE REFILL.
PRESS [SPACE] TO CONTINUE OR [f7] TO ABORT.

Don't forget that the user may not have any paper left to reload the printer, and may have to abort the program! The ESCAPE key (preset on some PETs, but Vic and 64 users can always use another key) gives the chance to quit the program safely – closing any files which may be open, and so on – rather than having to turn the machine off to recover from the situation.

If you are groaning at the amount of work involved in implementing these rules (and some of them are a lot more tricky than they look at first glance), just wait for the next issue! Then we get down to the real nasty bit, the actual data entry section: Read on next month if you dare ...

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c = Cassette Ca = Cartridge D = Disk

Screen Scene Vic

CHARIOT RACE
Vic-20 (unexpanded)
Keyboard only
Price £6.95

Step back in time to the good old days of Julius Caesar and Ben Hur (or him – we don't want to be accused of discrimination!), when more people flocked to watch the chariot races than they do the F.A. Cup Final.

Amidst the noise and dust, four teams thunder around the arena in a perilous bid for fame and fortune – the prize money could be as much as 60,000 sesterces (about 25p in these days of inflation). Great skill is needed to guide your chariot round the course at an ever-increasing speed, avoiding other competitors and raising your score by pushing them into the wall.

To start with, the opposing chariots are very well-behaved but as the score goes up, you'd better look out. Don't go too slowly or the crowd gets angry and starts throwing fireballs on to the track. It is fatal to run over one of these and survival at a low speed is very difficult.

This is a superb game for one or two players, the only snag being that it is keyboard only, and those who have a distinct inability to distinguish their left from their right will be in dire trouble with the emperor – if they succeed in getting round the first lap, that is! Realistic sound and good graphics – all squeezed into the unexpanded Vic – marvellous! *WG/PR*

Micro-antics

Presentation:	■■■■■
Skill level:	■■■■□
Interest:	■■■■■
Value for money:	■■■■■

WUNDA WALTER!
Vic-20 (+16K)
Joystick only
Price £6.00

Wobbly, wacky and welcome is Wunda Walter. This is a funky, nonsense game requiring aeronautical skills and an aptitude for executing telling belly-flops. Guide Walter in a flight across four distinctive, scrolling landscapes, swooping down to the ground to steam-roller small, evidently offensive globes then lurching into the stratosphere again to avoid prickly vegetation and abrasive rocks. As you soar over hills and valleys, keep an eye out for maurauding balloon-bustas bearing in mind that errupting volcanoes ain't too healthy for wind bags either.

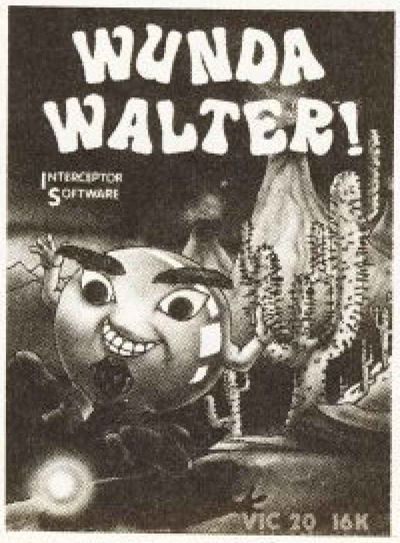
The title screen depicts the four regions which are to be your stamping ground: a red volcanic region; white icy wastes; a tropical sector; an arid yellow desert.

Soundwise? The Yellow Rose of Texas is the opening fanfare with good supporting sound effects scattered throughout the program. It is possible to wave goodbye to the Flying False Teeth of the first screen and face the cyan balloon-poppers of the polar regions simply by picking up easy points: there is no compulsion to stick your neck out, or whatever balloons have instead.

Overall, a first rate fun game full of colour and even a scrolling commentary. Not suitable, however, to those who prefer their close encounters to be of the deadly earnest kind. *LS*

Interceptor Micros

Presentation:	■■■■■
Skill level:	■■■□□
Interest:	■■■■□
Value for money:	■■■■■





SQUISH!
Vic-20 (any)
Joystick only
Price £5.99

Graphics and sound are adequate for the job-in-hand in this creepy crawly-crushing fiesta. You are a blue cross set in a white screen: by pushing green-outlined pebbles around you get to mash bugs – if you manage to catch them against something solid. Of course these purple insects move about searching for you, spit deadly arrows and are perfectly capable of shifting stones themselves. So you will need to be pretty quick and cute to rub them out and preserve your own hide. Not a lot more to say except that the game *is* original, enjoyable and not a doddle. Eminently playable, with twenty levels and the promise that the bugs become invisible on the real toughies. *LS*

Palace Software

Presentation:	■■■□□
Skill level:	■■■■□
Interest:	■■■□□
Value for money:	■■■■□



BRICKS
Vic-20 (any)
Joystick only
Price £5.99

A ridiculously simple idea ... why wasn't it thought of before? The graphics and sonics aren't brilliant but the game itself could well grab you by the scruff of the neck and have you utterly hooked. From the Great Brickyard in the Sky someone or other is raining down bricks in your direction: you are trapped in a mega hole. Your only hope of salvation is to jump on top of the bricks as they land, at the same time avoiding those making straight for your nut, thereby eventually scrambling to ground level. Five more screens to play though!

You can only jump up one block at a time but you may slide isolated bricks about to construct makeshift steps: you may leap down from any height without incurring a penalty. By making the pit narrower each time round, the clever cloggs author has ensured it doesn't become too easy. But just in case, from level three the height of your wall is reduced from time to time by a whole row.

I said it was simple, but most people should find it addictive. *LS*

Palace Software

Presentation:	■■■□□
Skill level:	■■■□□
Interest:	■■■□□
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Screen Scene



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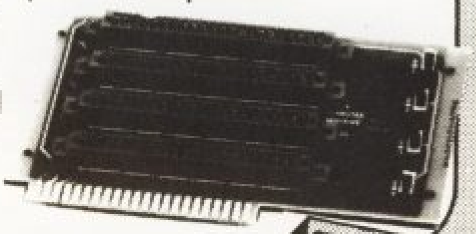
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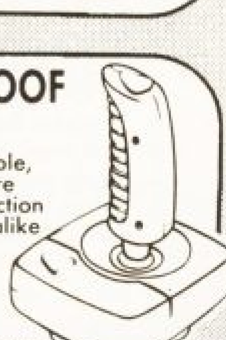


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COMPUTER PRODUCTS



The dim and gloomy evenings of winter begin to draw in. Now, more than ever, you'll be wanting to sit by the fire battling it out with hi-res mythical monsters. Not unaware of this, Adventure software houses are stoking up the boilers in readiness for the run-up to that great festive Spending Spree of the year...

Philip Mitchell's *The Hobbit* probably suffered a little from over-familiarity by the time a Commodore 64 version appeared; and the same may be true of *Valhalla*; several major outlets I've visited recently are offering the 64 version at a fiver below its recommended £14.95, which suggests that it's not moving off the shelves.

Anyway, Mitchell looks like taking the creative honours again with **Sherlock**, which Melbourne House release for the 64 this month at £14.95. His dastardly programming allows you to take on the persona of that well-known Baker Street sleuth, cross-examining and even arguing with other characters by using proper sentences in an against-the-clock search for the solution.

The emphasis in Sherlock is rather more on text than pretty pictures, but there are plenty of the latter to be found among the 40 full-screen animated graphics which illustrate **Castle of Terror** by Grahame Willis and Greg Holland, also from Melbourne House, at £9.95. Haven't played it yet, but first impressions are pretty favourable.

Hampstead, a kind of adventure-cum-strategy game for men who do eat quiche, is also due out from Melbourne soon at £9.95.

Burning the candle

Another author who manages to devise consistently cortex-crunching graphic adventures with the apparent casualness of a Sunday morning shave is Brian Howarth, whose newest Channel 8 title, **Waxworks**, won't disappoint those who have already sampled earlier releases such as *Perseus and Andromeda* and *The Golden Baton*. Not for novices, perhaps, but the more experienced gamer will appreciate the clever challenges to logic and resourcefulness that this author devises.

The game lets you take on the role of an innocent among the candle people, facing all kinds of strange situations as you explore the not-so-inanimate population of the museum. It comes with a helpful leaflet of general hints, but you can also get a clues leaflet from Channel 8 if you're really stuck. Altogether, it's pretty good value at £9.95.

Incidentally, Vic owners with a 16K RAM pack will be pleased to learn that special versions of Channel 8 titles will be available for them, too, in the near future.

Taking what our American cousins call an overview, it's still a little surprising to see a virtual absence of any new text adventures for months now. Thankfully, Commodore are remarketing several classic Infocom titles – **Zork I, II** and **III, Starcross** and **Suspended** among them – at £11.90 on disk only; that's around one-third the original import price of just a year ago. These remind us just how good (indeed, how unbeatable) a text adventure can be. And the player guides that come with all these titles are also state-of-the-art examples of how such documentation should look and inform. Pity about Commodore's cheap and nasty cuppa-soup cartons.

Room with a view

Jason Benham is quickly proving that, like Jeff Minter, he's no one-title wonder. With *Outback* and *Megawarz* already in his swag-bag, the young Mr Benham has turned his talents to the realm of arcade adventures and **Room Lord** (Paramount, £6.95) is the very creditable result. There's nothing too new about the concept, which has your alter ego picking its way through some nicely designed and animated screens to amass a number of objects and treasures.

Some of the graphic elements acknowledge the art of Matthew Smith and the aforesaid Mr Minter (including that Daliesque winking eye) but many are very original, exciting or just plain nice to look at – and as there's a freeze-game facility, you not only have a chance to cool your joystick but also an opportunity to study and perhaps learn from the author's ingenuity with sprites and user-defined characters.

A nice feature of Room Lord is that you can start making progress through the early screens pretty quickly, which works wonders in holding interest. As an arcade-style diversion that doesn't presume a high level of ability at the early stages anyway, and which also makes better than average use of the 64's music capabilities, Room Lord could be one of the better buys for your library.

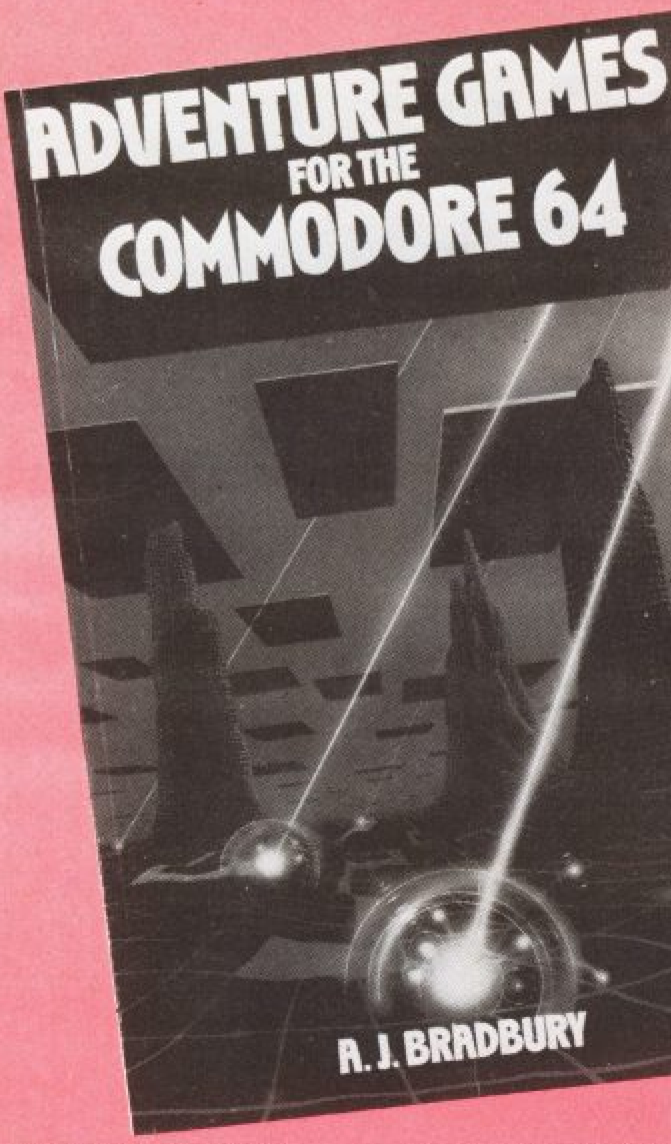
Club spot

Top adventure titles are among the goodies offered to members of two new mail order software clubs. The **Home Computer Club**, a spin-off from the huge W H Smith/Doubleday operation, has a special selection for 64 owners and lets you choose three titles from a selection of 15 tapes and books at just 75p each. They include **The Hobbit** book/program package, Keith Campbell's **The Pen and the Dark**, and a Collins adventure for the weanies, **Paddington's Problem Picture**. Thereafter you're committed to making one purchase every two months. Details from HCC at Swindon, SN1 5XE.

You can join the **Commodore Club** run by Logic 3 for £3 a year and enjoy discounts of up to 50% on scores of 64 and Vic software, which you buy if and when you like from the tempting catalogue. The first edition offers several Level 9, Channel 8, Supersoft and Richard Shepherd titles at an average £1.50 below shop prices for tape or disk. Address is Mountbatten House, Victoria Street, Windsor, Berks.

Do it yourself

There can be few adventurers who don't plan to take a stab at writing an original of their own one day – and maybe have started. But if you don't have an original thought in your head, you can always crib from the works of a famous author (but give Tolkien a rest). And if it's your technique you need to polish, you'll probably need to look no further for tuition than A J Bradbury's **Adventure Games for the Commodore 64**, (Granada, £6.95).



Now while my personal favourite as a Primer remains Mike Grace's Commodore 64 Adventures (Sunshine, £5.95), Mr Bradbury takes the reader up more sophisticated avenues. His highly readable explanations are supported by effective and often downright ingenious routines for introducing independent action of characters or events, tokenisation (which permits you to cram your text screens much fuller than your 39K of usable RAM normally allows), compound parsing to allow full sentence inputs, and much more.

This book scores most when it's covering the tricks and treats of text input and response, and thus the chapter on sprites and sound could have been chopped to good purpose in favour of even more of the author's spot-on observations of what makes a good and bad adventure. It still has to be the book of the year on this subject; a treasury of professional programming secrets that can help to bring real slickness and sparkle to even your earliest attempts at adventure authorship.

Short-trousered adventuring

You'd be right in presuming that the same Mr Livingstone who brought dungeons and dragons to our shores almost single-handed, is the author of Puffin's best-selling *Fighting Fantasy* adventure books; one of these is the launch title in Puffin's new range of software. **Forest of Doom** is so visually strong that you really need to see a demo to have any idea how good it is. Sure, it's simple in terms of player response – just a couple of action options every move – but this is more than balanced by the imaginative descriptions of the characters and locations, limitless variations of the scenario at each play, animated interludes (which have the player literally dicing with death) and constantly-refreshed status screens. Although Forest of Doom is clearly intended for children, it certainly won't disappoint the adventurer in long trousers either.

For even younger players, keep a look out for **My First Adventure** from *Jolly Rogers Software* (£5.95 tape, £9.95 disk). After being greeted by a pleasant snatch of music, the player is launched on the task of searching for the characters from several familiar nursery rhymes, and must take the right action when they're encountered if you're to make further progress.

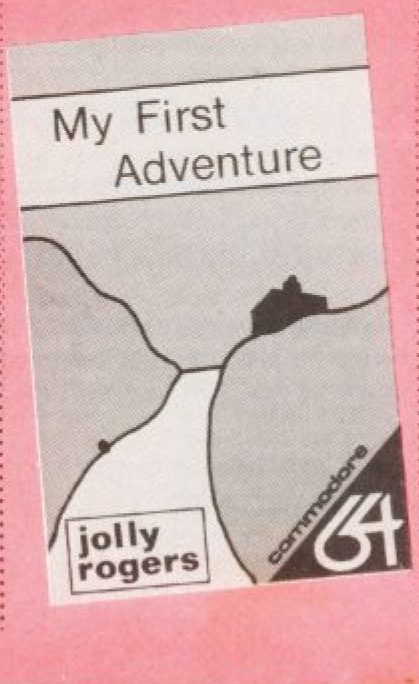
There are lots of colourful graphics and sound effects to hold the young player's attention — and even the spelling of the fast, helpful and often amusing responses are guaranteed correct; were that it was always so! As Jolly Rogers are a small outfit, your usual retailer might not stock the title; you can order it direct from 19 Castledown Avenue, Barnehurst, Bexleyheath, Kent DA7 6QT.

Screen tip

One of the nice touches about Ian Livingstone's Forest of Doom is the way in which the text 'washes' across the screen letter by letter. It adds interest and the technique allows you to vary the speed at which the text is presented (or allow the player to choose). Here's one way of achieving a similar effect:

```
100 POKE 53280,6:POKE
    53281,6
110 PRINT CHR$(147):
    X$="THIS IS ONE
    EXAMPLE OF SHADOW
    PRINTING"
120 FOR A=1 TO LEN(X$)
130 PRINT CHR$(154); :PRINT
    MID$(X$,A,1);
140 FOR B=1 TO 80:NEXT B
150 PRINT CHR$(157)CHR$(5);
    :PRINT MID$(X$,A,1);
160 FOR C=1 TO 125:NEXT C
170 NEXT A
180 PRINT SPC(41):GOTO 120
```

Be careful to include all four semicolons in **lines 130** and **150**. The speed at which the shadow and main image of every letter appears and is replaced can be easily altered by shortening or lengthening the delay loops in **lines 140** and **160**.



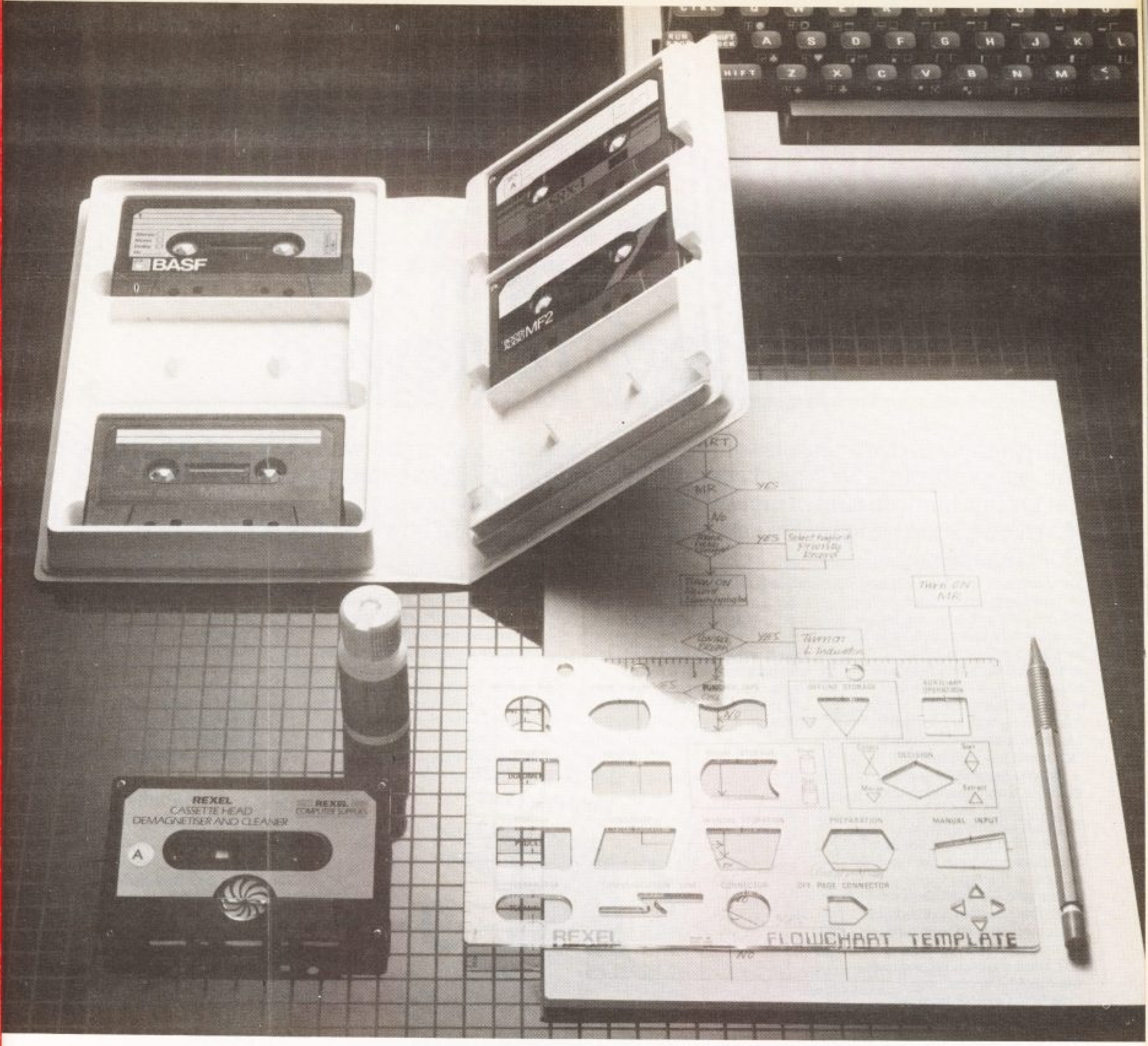
Do you have a short routine for enhancing the appearance or layout of text and graphics in home-made adventures that you'd like to share? If so, write to me, c/o **Commodore User**, with the details and/or a listing and I'll try to include a selection in a future issue. Sender of the tip I autocratically judge the best will win a copy of *Adventure Games for the Commodore 64*.

In a future column, I'll be taking a fairly critical look at some of the programming aids of particular interest to adventure writers; including those graphics utilities and compilers that can help you develop text or graphic adventures of a commercial standard. Drop me a line if there's any you can personally recommend. Incidentally, Gilsoft are following up their much-welcome release of a 64 version of The Quill (which seems to offer some refinements over the Spectrum original) with several text adventures. **Devil's Island**, **Barsak the Dwarf** and **Mindbender** should all be worth investigating at £5.95 each on tape.

New Releases

The buzz is that to counter the blows raining from Maxwell's silver hammer, *The Sun* mean to launch a rival to Mirrorsoft; titles will include explicitly graphic adventures responding to simple one-word commands nearly spelt right... Four programs on two tapes is what you get with the 64 version of **The Pettigrew Chronicles**, a graphic adventure from Shards at £9.95...Richard Shepherd will follow the safety-pin charm of Urban Upstart with the more rural **Upper Gumtree** at £9.95, or £11.95 on disk.

Quicksilva haven't forsaken adventurers after all – their first since the 1983 title *Ring of Power* are the disk-based animated quests **Dungeons of Ba** and **Castle of Jassoon** (out for Christmas at £14.95). Creative Sparks promise toil and trouble in **Macbeth**. Plenty of adventures to play and techniques to crib in **Adventures for the Commodore 64** from Virgin at £2.95. **The Saga of Eric the Viking**, a graphic adventure based on the pythonesque Terry Jones' award-winning children's book will be Mosaic's next big release for the 64, at £9.95. Phew, that's enough for now.



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TAKE A CLOSER LOOK AT REXEL

Wordprocessing on the cheap

Textpro reviewed

by Chris Durham

With many wordprocessors for the Commodore 64 costing between £45 and £90, what can you expect from a WP package costing under £10? What can the casual user expect to get for this humble sum of money? We set our wordprocessing guru, Chris Durham, to track down one such program to see how it compares; here's how Textpro from CentreSoft (US Gold) shapes up...

Many users of the Commodore 64 can't justify spending up to £90 on a WP program, simply because they just wouldn't use it enough to make the outlay worthwhile. So a wordprocessor costing under £10 must surely warrant a look since this is much more in line with the 'casual' purchase and not much more than you'd pay for a game.

Textpro costs £9.95, and is available from CentreSoft under licence from A and C Software. The disk version is slightly more expensive at £12.95. If you have a disk drive, you must get the disk version as the tape version is unable to save documents on disk. This is rather a drawback for someone who buys the tape version and then upgrades to disk later; perhaps the suppliers will consider an exchange?

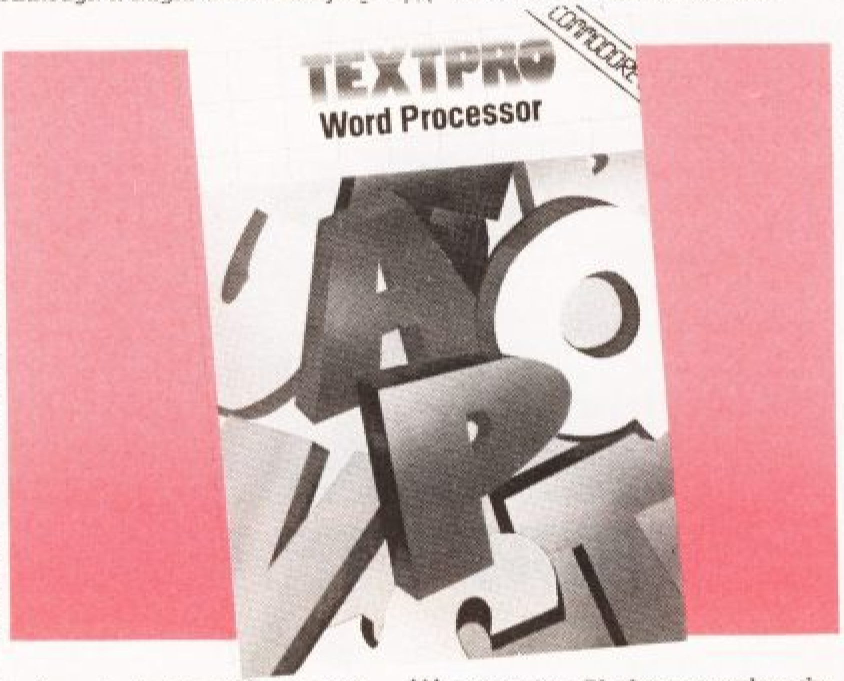
As you'd expect from the price, Textpro has several drawbacks compared to its more expensive brethren, notably the size of documents it can produce. This doesn't imply that it does not have the capacity to hold large documents, rather that its deficiencies become rather obvious the larger the document you are working with.

Textpro can accept 350 lines of 70 characters; this is fixed and you cannot alter the line width. This will not really be a problem in practice since 70 characters is standard for letter writing on most printers. There used to be no way of adjusting, or even setting, the page length, but the new version just released now has a 'page break' option.

This allows single sheet paper to be used as well as enabling you to set the top of page correctly on fan-fold paper. You can also concatenate files into one document, provided the total does not exceed the maximum number of lines.

Inputting text

This is straightforward and unsophisticated; like many similar cost programs you cannot use the cursor keys, only '*delete*'. Although it might seem annoying to have to delete half a line just to add a missed word or letter, you will be much better off doing it at this stage rather than trying to add things later using the '*Edit*' option.



Tabs can be obtained using **f8**, but operate in a peculiar way; instead of having preset Tabs, you specify which column you want to Tab to each time you select the function. The result is the same, but I found it a little clumsy. After all, you don't tend to change the Tab settings every line. It's also possible to '*centre*' headings by using **f4**, but this is limited to exactly half a line (35 characters).

Text is formatted by making two lines on the screen equal one printed line. This means that words *wraparound* on every other line, that makes what actually appears on the screen rather difficult to read. When you reach the 65th character a '*bell*' sounds, reminding you that you are near the end. If you type more than 70 characters then the line stops at 70 and ignores the rest; if you haven't completed the word you are currently typing you must delete it, press RETURN and re-type it on the next line. The 'bell' is a good idea, but constantly deleting part words because they don't fit is a bore; two-fingered typists will probably not find this a problem, however.

Blank lines can be left by pressing Return only; one restriction being that you cannot have a blank line as the first line of a document.

Pressing **f1** at any time will return you to the menu. You can then print, edit or save text before returning to add more text if required. While on the menu you can also check on remaining memory and get a count of the number of words in the document so far. One slight problem is that the word count is rather inaccurate. I typed a file of twelve words and then made it do a count – the result was 16. It serves as a guide, but don't rely on it.

Outputting text

This can be done either to a printer or to the screen. The printers which can be used are limited to Commodore models like the 1515, 1525, and 1526. A Centronics parallel printer will work quite happily using a serial port (not User port) interface. One advantage is that Textpro can also be used with the 1520 printer/plotter, an option not available on many other WP packages.

There are no options of any description when printing; it just puts on paper exactly what is held in memory. Thus you cannot print text double spaced, emphasised, enlarged or anything else that your printer might be capable of. This immediately limits its scope to basic home correspondence; this is reinforced when you consider the print quality of the printers it is primarily intended for use with.

The screen print option displays four complete lines at a time so that you can check them; that's rather laborious for large documents. You are returned to the main menu at the end of either option.

Editing text

This is the area where economies are invariably made

MusiCalc

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CREATIVE MUSIC

MusiCalc turns your Commodore 64 into a sophisticated musical instrument. And it turns you into a composer, performer and conductor.

MusiCalc 1's Synthesiser and Sequencer is the heart of the system. With it you can use your computer keyboard to program the tempo, key and style of music you want, and also to play your favourite tune. The computer screen will show you what the music's doing as you play and how to control it.

Start by selecting one of MusiCalc's preset scores. Try combining that with a preset sound you like. Choose the scale you want to play in – anything from jazz to Japanese.

And you've got music.

Exercise your musical creativity by putting the three voices together any way you want, and play whichever parts you'd like. Make changes and add special flourishes to create your own compositions.

Even a musical novice will sound good right away. And the greater your musical talent, the more challenging and exciting MusiCalc becomes.

And the result is not mere imitation of conventional instruments: between them, MusiCalc and the Commodore 64 can and should perform as a single musical tool in their own right.

There are things that you can do with that tool which would be impossible on anything less than an expensive professional synthesiser: MusiCalc's music is its own.

PROFESSIONAL QUALITY

A professional synth user would immediately recognise the concepts and facilities in MusiCalc.

It is sufficiently simple, sane and sound for use by the inexperienced hobbyist; and it is sufficiently rich and complex for use by non-electronic musicians.

Those facilities include:

- a *control panel* with 'slider' switches
- *waveform selection* for each voice
- *ADSR envelope* controls for each voice
- *gate* synchronisation controls
- *ring modulator* controls
- *pitch* transposers
- *fliter* controls, include low and high-pass bands
- *tempo* and *volume* controls
- a *score grid*
- a *score display* for composition via notes and octaves
- built-in ready-to-go *tunes* to play or edit
- the ability to *save* further scores
- a variety of *different keyboard scales*

This means with MusiCalc you can ...

1 compose and edit music

2 play it in a variety of different ways (with different time signatures, simulating different instruments, etc)

3 save a tune and subsequently reload it to play or edit.

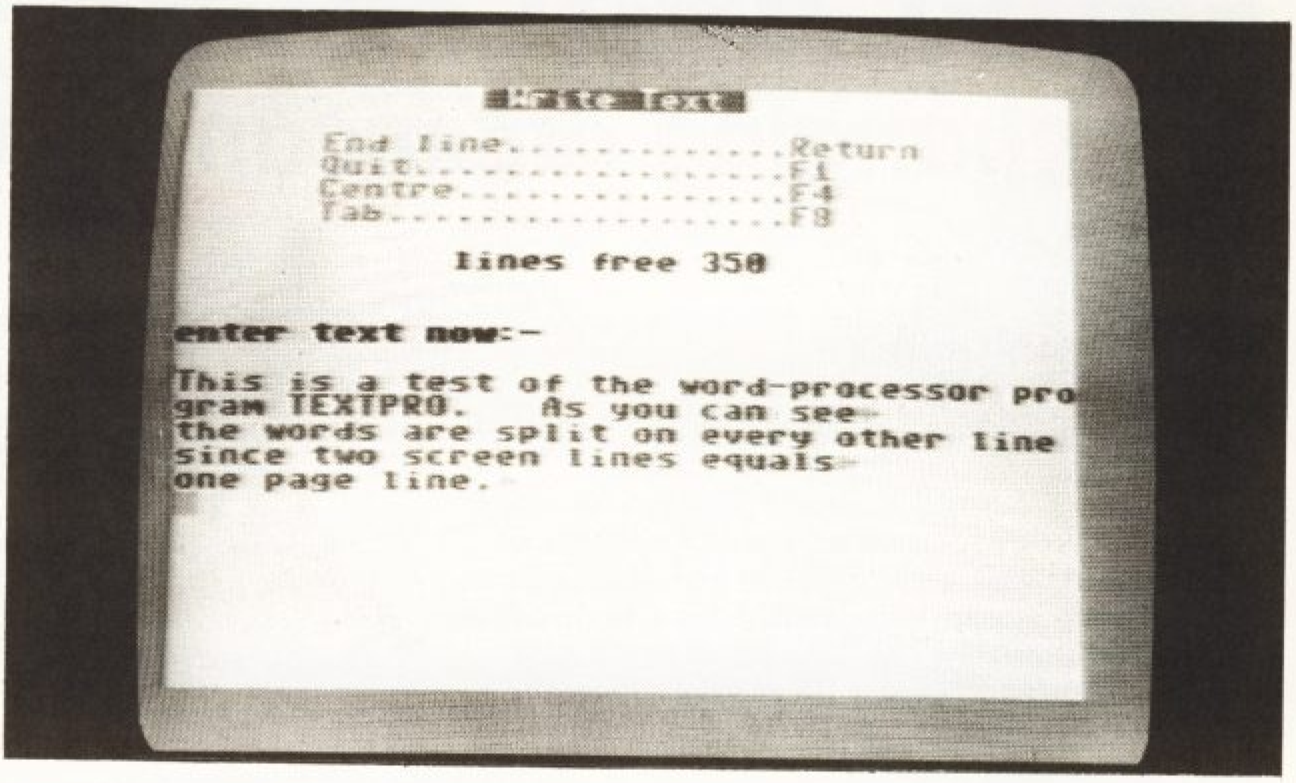


in cheap wordprocessors, yet it is this facility that makes a good WP program so useful. Some of the cheap WPs limit you to editing a single line at a time by re-typing the whole line. This program is better than that in that there is a 'BBC Computer' style Copy facility which allows you to copy the old line using the 'cursor right' key; so you only retype or delete the incorrect characters.

The drawback, as with nearly all cheap WP programs, is that there is no way to add another word on a line if it is already full. If you missed out a word and the sentence doesn't make sense without it, you have a problem. For example, I wanted to add the single word, 'of' to a line because it made a sentence sound better. After having to alter the following six lines as well I gave up in despair. To have added that one small word would have meant re-typing the entire bottom half of the document.

Although this was undoubtedly a 'worst case' situation it does reveal the problems of these cheap programs. Also, after editing a line you are returned to the main menu each time. You therefore have to reselect the edit option, then scroll through the document from the beginning to get back to the point you had reached before you did the edit. This can be very annoying if you are editing the final page of a 300 line document.

But Textpro does have one 'extra' editing command that many cheap WPs fail to include, and that is a Move option. Textpro allows you to move one line at a time to anywhere else in the document; not as good as a block move facility, but certainly better than nothing. There are also options to Insert or Delete whole lines. Single words or phrases can only be deleted by not copying them on the 'change line' option; you are then left with a gap at the end of that line. There is no 'copy line' command so you cannot duplicate text already written elsewhere in the document.



Saving and loading text

As mentioned in the introduction, the tape version can only be used with tapes for storing documents. The disk version has a replace option for an existing file as well as saving to a new file, although knowing the bug in the 1541 disk drive I would not recommend using this option. There are three other disk commands available: formatting a disk, deleting a file and reading the directory. The last of these does not overwrite any text in memory and is therefore quite useful.

The manual

This consists of a nine-page folded sheet that fits in the cassette box (or eight A4 sheets for the disk version). The manual is quite adequate for a program of this type, but does not make for easy reference. You sometimes have to read the thing a couple of times to find out what to do in a given set of circumstances. However, this will only really be a problem initially since there are not that many facilities to learn.

Conclusions

At this price you just can't expect miracles, yet Textpro is capable of dealing with exactly the type of document which someone buying this program is likely to want to produce; home correspondence and general notes, for example. The limited editing facilities could get very frustrating if you need to do anything fancy – so don't try. I would rate this WP as adequate rather than outstanding and anyone who had tried 'the real thing' would find it very difficult to come back to. However, as a starting system, it's a thoroughly respectable offering and you won't go too far wrong with it, especially with this latest version.

Summary of facilities

Use of 64 facilities	★★
Editing	★
Ease of use	★★
Output formatting	★
Printer support	★
Document size	★★
Manual	★★
Disk/tape facilities	★★★
Mail-merge	
Error handling	★★★
Spelling check	
80-column option	
Overall facilities	★

FOR

- Price

AGAINST

- Very limited facilities overall
- Limited editing facilities
- Limited printer options
- Text does not appear on screen as it will be printed

Under review	Textpro
Description:	Wordprocessor for 64
Supplier:	US Gold/Centresoft
Address:	Unit 10 The Parkway Industrial Centre Heneage Street Birmingham B7 4LY
Telephone:	021-359 3020
Summary:	Very cheap, but limited, useful for home applications
Price:	£9.95 (tape) £12.95 (disk)

Letter from America

The changing American computer scene

Dan Gutman reports

Dan Gutman keeps his finger on the pulse of the American computer scene with his syndicated Computer Report Today. But he's taking time out to start a regular column of news, views and gossip about the Stateside Commodore scene, especially for Commodore User. This month – the Commodore 16 and Plus/4 machines hit the US market. Are they what the Americans really want ... and is there something better?



Welcome to America! It's interesting yet pretty confusing that two nations that speak the same language, listen to the same music and feel so close to one another would be so different when it comes to computers. Over here, for instance, 80% of Commodore 64 users use a disk drive to load programs. I'm told that in England, most programs are on tape. Virtually no tape is used here – I reckon Americans probably don't have the patience for it.

In the US, the Vic-20 is practically a dead computer now. Oh, there are plenty of them out there (over two million, they say), but most of them are stashed away in closets. When the 64 was released back in September of 1982, millions of people "stepped-up" from the Vic. And right now, when a new program is released in the US, it's usually made primarily for the 64 and the Apple line before any other computers. There is practically no new software for the Vic anymore.

And the 64 looks like it's peaked too. It's been an even bigger success than the Vic – Commodore has sold over three million Commodore 64s, and they're still cranking out 100,000 a month (that's one every five seconds, by the way). The price has dropped as low as $179 (about £150). But the computer industry changes fast.

The word on the street is that this will be the last big Christmas selling season for the 64 here in the States. It's a great little machine, but there is a definite movement away from the "cheap" computers and toward the more expensive and powerful ones over here. I think people just feel that any machine that is so inexpensive can't really do much. Apple's new and expensive Mackintosh is what Americans are lusting for now – it's powerful, it features incredible graphics, and it's the easiest computer in the world to use.

So What's Next?

As you already know, Commodore has three new computers that they hope will carry on the tradition of the Vic and 64. I had a chance to play with the first one, the Plus/4. You may remember when Commodore announced a new machine called the 264 about a year ago. Well, that's basically what the Plus/4 is. It has been criticized in advance both here and in Britain for being "no improvement on the Commodore 64," but it's a different kind of computer to the 64. You don't need to be told, but the 64 featured good graphics and spectacular sound – just perfect for computer games, simple word processing, and some home programs. The Plus/4 is being billed as Commodore's "productivity" computer.

It's easy to criticize the Plus/4. It lacks the sprite graphics of the 64 and its sound chip can only handle two simultaneous music tracks. The memory, 64K RAM, isn't a byte more than the 64. But when you turn on the Plus/4, you see "60,671 bytes free." The 64, with all its 64K, only gave us a meagre 38,911 bytes to work with.

Commodore reckons the Plus/4's biggest attraction is its built-in software: you remember, the word-processing program, file management, and financial spreadsheet this $300 machine comes with. These programs can even "talk to each other". You can, for example, use the top half of the screen to process words and the bottom half to calculate a budget. Then, when you're ready to print, you can drop the spreadsheet or graph right in the middle of your manuscript. Obviously, the Plus/4 is intended as a machine for small businesses more than anything else.

Commodore is also introducing the Commodore 16 here in the States, which seems to fit somewhere between the Vic and the 64. It has 16K, will sell for around $100, and they're planning to call it "America's Learning Machine." My sources, however, tell me that the 16 will be pushed more on your side of the Atlantic than mine.

Amiga, Amiga

But the most exciting news out of Commodore is the top-secret "Lorraine" computer. About a year ago, I heard from a reliable source that a little company named Amiga had developed a computer that would "blow away" the rest of the industry. I didn't put much stock in it, because the only product Amiga had produced so far was a ridiculous game controller called *The Joyboard* that you'd stand on and manipulate with your feet. Their computer was code-named "Lorraine", after Lorraine Morse, Amiga president Dave Morse's wife.

Word began to sneak out about Lorraine (the computer I mean, not Dave's wife). It was put together by some "ex-Atari hotshots", and was powered by the Motorola 68000 microprocessor. It would have built-in disk drive, 128K, built-in software, resolution up to 600 x 400, and sell for under $1000. At the last Consumer Electronics Show in June, I saw the Lorraine behind closed doors at the Amiga booth. The graphics were indeed remarkable – they were showing some animations that looked like they had been done on a million dollar machine.

The rumour was that Atari was going to buy Amiga outright and release Lorraine as Atari's "high-end" (expensive) computer. But during negotiations, Commodore founder Jack Tramiel bought up Atari, and Amiga decided against the deal. The next thing you know, *Commodore* turned round and purchased Amiga, so now it looks as though Commodore will be releasing Lorraine. The lawsuits began to fly – Atari sued Amiga for reneging on the deal and taking the technology to Commodore. They'll be in court for a while yet.

So now the people that stepped up from the Vic-20 to the Commodore 64 can step up to the Lorraine. It may be what America is looking for – a Mackintosh that Joe Computer Owner can afford. Lorraine (or whatever it will be called) won't be available for awhile, but I'll keep you posted on it – along with any forthcoming hardware and software from Commodore. Catch ya' next month.

You really can't go wrong with any Level 9 game as they are really brilliant

CRASH MICRO SEPT '84.

"Whichever machine you own, if you have the vaguest tendency towards adventure playing then you must try one of these games (unfortunately you'll probably end up wanting to buy the lot!)."
Computing Today, August 84

"To me, all Level 9 adventures create a remarkable atmosphere because the descriptions sound so life-like. This is where so many other adventures fail."
Crash, July 84

"But it's not just the size of the game it's the quality as well that is astonishing ... ... scenes to fire the imagination."
PCG, April 84

"As in all Level 9's adventures, the real pleasure comes not from scoring points but in exploring the world in which the game is set and learning about its denizens."
Which Micro?, February 84

"(LORDS OF TIME). As we have come to expect from Level 9, the program is executed with wonderful style . . . Highly recommended."
PCW, 1 February 84

"I thoroghly recommend these Adventures, they are excellent value for money. No self-respecting Adventure-addict should be wi... them. I believe Level 9 are producing a ... of Adventures which should be regarded classics."
Atari User

"These programs run very fast and th... no frustrating pauses. Level 9 Adventure... superbly designed and programmed, the contents first rate. The implementation of Colossal Adventure is nothing short of brilliance; rush out and buy it. While you're at it, buy their others too. Simply smashing!"
Your 64, June 84

"Level 9 – arguably the producer of the best adventure games in the UK – has done it again. LORDS OF TIME is a sparkling addition to its stable of winners."
Acorn User, July 84

"(SNOWBALL). This is another imaginative, massive-scaled immensely enjoyable adventure from those experts down at Level 9 Computing."
Your Computer, March 84

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NEW

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5. **RETURN TO EDEN.** SF adventure on the weirdest planet ever. The sequel to Snowball, though you don't need to have played this.	☐	☐
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The 64 ought to be an excellent computer for games – and fortunately some suppliers are indeed taking advantage of that. Others aren't. Here's this month's crop of reviews.

How do we assess games? Basically we play them – which may sound obvious, except that all the reviewers have seen so *many* games that they can apply a bit of comparative experience to the evaluation.

We rate games out of five for each of four criteria. **Presentation** means how well the thing is packaged and how good it looks on the screen: dull graphics and poor sound get marked down here. **Skill level** refers to how much skill (of whatever kind) is required to play the game – so if pure chance is involved, the game gets a low mark. (But don't dismiss it on that: some 'chance' games are great fun.) **Interest** is an answer to how well the game did at maintaining the reviewer's interest in it. And **Value for Money** is obvious enough: it's our overall conclusion about how it compares with other games and whether we'd buy it ourselves.

Screen Scene 64

CAVERNS OF KHAFKA
Joystick only
Price £8.95

The need to remember eight joystick positions, sometimes in concert with the fire button, to control fifteen actions does not detract too much from the enjoyment of the game, for after a while there is no need to stop and cogitate, as the correct responses come more or less naturally. What ruins the game for me is the fact that tumbling colossal boulders and free-falling rocks are stopped dead in their tracks whenever you fire your gun, thereby making the action very disjointed.

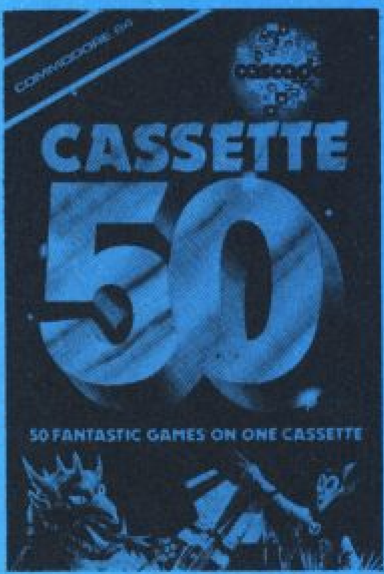
For starters the macabre atmosphere conjured up is spot-on. You guide the explorer (Indiana Jones?) through the Egyptian burial chamber (noting the four-way scrolling as you go). Scarab beetles and bats prowl around, overlaying creepy-crawly sounds to the grim music ... shoot 'em! Bubbling pools of obnoxious lava will have you leaping ... be careful! But don't bump your head; crawl where necessary, yet you are allowed to fall up to twice your height without coming to grief.

Down to business: you must collect five golden seals and place them in the template. When the last has been successfully placed you are transported to a chamber containing the Sphinx; touch her forehead before the guards rob you, then receive the points. Overall I feel ambivalent about this one. It is original and astmospheric but it certainly has it's flaws. *LS*

Cosmi/US Gold

Presentation:	■■■□□
Skill level:	■■■■□
Interest:	■■■□□
Value for money:	■■■□□

CASSETTE 50
Joystick only
Price £9.95



As is always the problem when cramming so many games on to one small cassette, something has to give, and in this case it is the quality of the games.

Just about every type of game that has been thought of has been included – maze, arcade, missile, tactical and logic – to suit most tastes in computer game playing. However, they are very much on the basic level and as such are really only suitable for the younger members of the family. However, that's not to say you won't have fun trying them all out before the kids get hold of the cassette and you don't get a look in from them on. *WG/PR*

Cascade

Presentation:	■■■□□
Skill level:	■□□□□
Interest:	■■□□□
Value for money:	■■■■■

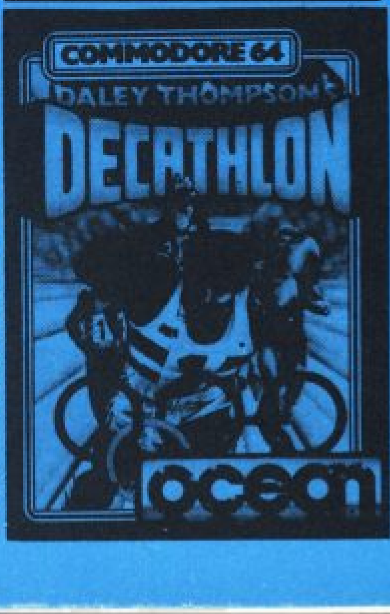
DALEY THOMPSON'S DECATHLON
Joystick only
Price £7.90

A psuedo-expanded screen (the border is variously coloured to match the action area) gives some idea as to the care taken with the graphics, which are in fact very effective. The long jump sequence is first class – right down to the adjudicator with the measuring tape. As for the remainder, I found the throwing events far preferable to the painful bouts of running. Painful? Well you have to snake your joystick vigorously from side to side to gain speed; after a while this becomes very unpleasant. The day when you need to do a Jane Fonda simply to play a video game has arrived.

Failure to qualify in any of the ten track and field events results in the loss of a life. The pertinent times and distances to achieve in order to pass, along with the points scored to date, are shown at the top of the screen. If you are a dedicated Daley Thompson fan, wish to take part in athletic events by proxy or are extra keen on unorthodox joystick actions then arrange for a demo – don't buy on spec! After this program had given me a workout I was utterly sick of it. *LS*

Ocean

Presentation:	■■■■■
Skill level:	■■■■□
Interest:	■■□□□
Value for money:	■■■■□



DALLAS QUEST
Keyboard only
Disk only
Price £9.95

To the intrepid adventurer the prospect of venturing into the dark corners of Southfork might seem like immersing oneself in a 'Mills and Boon' romance novel, but this could not be further from the truth.

The story unfolds thus: you are lured by Sue Ellen to uncover a missing map which gives the location of a multimillion dollar oil field. Various obstacles are placed in your path including nasty old 'JR' himself. Along the way you can collect clues, some slightly more cryptic than others, and pick up various objects and discard them as their usefullness becomes redundant.

Dallas Quest is a graphical adventure: each location has its own graphical representation, which is accessed from disk each time you tell the computer that you wish to move (which only takes a second or two). That means cassette users will either have to buy a disk drive or content themselves with other graphical adventures.

The displays are created in about two to three seconds and progress along the path of success seems to be less of a frustration than with some other graphical adventures although this is not to suggest that the solution is easy. The game has a 'save' facility. Obviously that's essential for this type of game, and it's obviously easier by the use of disk.

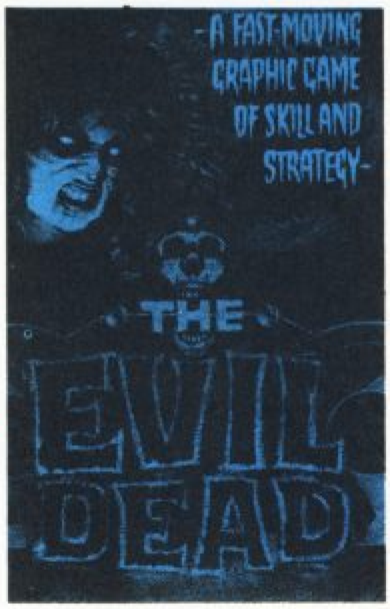
The presentation is very impressive, not only graphically and musically but also in the sense of humour which has been injected into what might at first seem a mediocre scenario. It is only one of the few games which makes greater use of the Commodore disk drive and should provide hours of fun and frenzied activity for all the family. *SBJ*

Datasoft

Presentation:	■■■■■
Skill level:	■■■■□
Interest:	■■■■■
Value for money:	■■■■■

THE EVIL DEAD
Joystick only
Price £6.99

And now for something not completely different; fundamentally this is a mayhem merchant's, mons-



ter-mashing mazurka with an element of strategy added. If you soak up the demo with the 'story so far' scrolling by and the morbid organ music (sounds like an undertaker having a rave up ... quite good) then yes, the game does have atmosphere. But skip the intro and it's just another maze game with a dash of spice. Don't expect chunks of flesh or buckets of blood.

Having arrived at a decaying shack you discover it has a curse; the Spirit of the Evil Dead loves to mutate resident sweet, innocent humans into green abominations. As you dash round the three-screen-length maze slamming the doors and shutting windows to keep the spirit out, others keep blowing open.

Of course the ghost gets in eventually and works his way with your chums who in turn set their sights on you. To eliminate your erstwhile mates you have to slice them up then deal with the dismembered joints. Score enough points and a book appears; grab it and throw it into the fire to win the game.

The sound effects are o.k. while the action is average: ignore the hype. Likely to prove interesting to ace maze travellers. *LS*

Palace Software

Presentation:	■■■■□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■■■□

FLAK
Joystick only
Price £14.95

The game starts with a very impressive title screen with the word *Flak* in large letters. It's a shoot-em-up where you pilot an aircraft over enemy territory to knock out their headquarters. The enemy has other ideas and not surprisingly resents your attempts to destroy their base. Enemy missiles are fired in all directions, especially yours, from turrets which open up, shoot and close again.

Despite frustrating hours of playing I could not get as far as the enemy base even on the beginner level. The scrolling of the screen as you move through the defences is very smooth but the graphics had a slightly coarse look, possibly as this is a conversion from the Atari.

Sound was slightly disappointing and the explosion noises a bit feeble. There are two skill levels described as beginner and normal. Impossible and suicidal would be more fitting: this is one tough game! Only available on disk, Flak takes longer to load than almost any other disk game I have ever seen. While loading there is a depressingly slow on screen countdown of numbers of blocks to go. £14.95 is a lot to pay for a game unless it is really exceptional – Flak is merely good. *DG*

Funsoft/US Gold

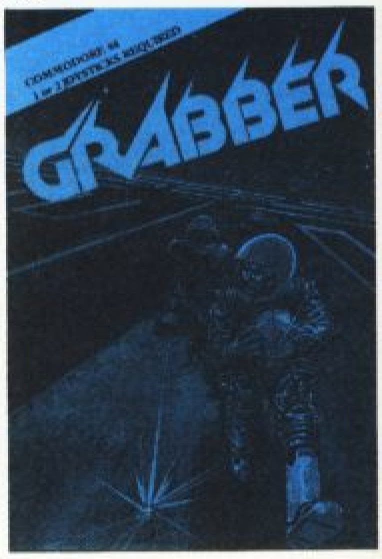
Presentation:	■■■■□
Skill level:	■■■■□
Interest:	■■■■□
Value for money:	■■■□□



GRABBER
Joystick only
Price £8.00

Not one but two mazes are displayed on each screen, both populated by peskies out for your hide. While you are tidying up the place by taking the 'bones' to the central reservation, indestructible blue monsters keep popping up trying to undo your efforts before setting out on your trail. You may switch at will between the two sectors via the fire button, tactically avoiding destruction or perhaps to complete the collection process.

Four power pills (what else?) are divided between the two mazes giving you the power of death over the brown meanies for a limited time. When all eight slots have been successfully filled another of the ten boards pops up, with the occasional no-chaser bonus board interspersed. To rack up a hefty score on the latter, some nifty board switching is needed as there are plenty of dead ends in each maze ... it's not just a points hand out.



The background melody is appealing but for extended stretches of play the volume control on your TV will need tweaking. *LS*

Microdeal

Presentation:	■■■■□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■■■□

INTERDICTOR PILOT
Keyboard only
Price £17.95

At last, a space-flight simulator. With this pricey offering you buy the 48 page manual and get the tape free. Apart from explaining the function and purpose of the gauges and controls, the manual gets to grips with the rationale behind each device, along with the relevant scientific principles. In fact everything relating to a sophisticated, interstellar, 21st Century, death-dealing interceptor is laid bare.

Overwhelming? Of course it is, but there is a special simulator mode which allows slow motion



practice flights, so that potential pilots may make steady progress and get the feel of things. Naturally you will want to view enemy craft in close-up on the VDU, which is fine as long as the opportunity is taken to familiarise yourself with the various operational systems and the inevitable malfunctions concomitant with cosmic combat. Then, of course, there follows the small matter of successfully landing back at Star Base...

You meet five different types of craft – not all are necessarily hostile. Identification rests on interpreting the unique 'transponder' and sometimes just old fashioned visual inspection. Laser beams or photon bolts, the choice is yours: either way make use of the excellent target direction -indicator /gunsights.

There is an absolute plethora of indicators and banks of flashing lights to drool over; all requiring practical experience to interpret speedily and accurately, yet everything has a genuine function. For example, your potential top speed, actual speed and that of the potential enemy is displayed, plus a doppler gauge to disclose the relative velocity of both ships. I should state that a joystick can be used for direction if preferred.

A disk version is obtainable for £2 extra which makes this program, to the uncommited, seem expensive. But to the simulator buff it should prove an investment. After all there is an endless stream of missions on offer; things can only get better as your prowess improves and you opt for longer flights. Believe me, you really are the Interdictor Pilot, not just a key pusher. *LS*

Supersoft

Presentation:	■■■■■
Skill level:	■■■■■
Interest:	■■■■□
Value for money:	■■■■□

PERCY THE POTTY PIGEON
Joystick or keyboard
Price £7.95

Apposite music is provided with 'All Creatures Great And Small' and that ever popular mega-hit 'The Death March'. The graphics are bound to impress; the pigeon's territory covers several screen widths and is shown in 3-ply, so that as you move and the screen scrolls the impression given is very much that of 3D. A busy road, trees, hills, shops and a castle are depicted; if you are sharp eyed the beginnings of a nest will be espied.

The game revolves around collecting twigs from the roadway to complete the last structure whilst avoiding various hazards, according to the level. Pigeon crushing cars are the most obvious danger with low flying aircraft, hot air balloons, leaping cats and ferrets (very realistic); all these are death dealers whereas sparrows will merely steal your twigs. Eat butterflies for extra points and bomb some of your enemies with what are discreetly termed 'explosive eggs'. It isn't an easy task, especially as controlling the flight of Percy requires some nifty fingerwork.

Unfortunately, after the initial impact of the delightful graphics had subsided, my interest in the actual game took a nose dive; snatching nesting material from the jaws of death doesn't seem very substantial fare to me, even through ten levels. *LS*

Gremlin Graphics

Presentation:	■■■■□
Skill level:	■■■■□
Interest:	■■■□□
Value for money:	■■□□□



Converting Basic to COMAL

The complete reference

by Brian Grainger

Following my introduction to COMAL in the April issue of **Commodore User**, *I've had an amazing response to my free offer of public domain COMAL versions – and, many readers have written to say how much better than Basic they have found COMAL.*

But there are still some who argue that having learnt Basic they don't want the effort of getting on top of a new language. This article should encourage those who hold such views to convert to COMAL; it will also help the many Basic programmers using COMAL who want to convert existing program techniques.

One of the aims of COMAL was to be as simple as Basic; indeed, many Basic statements can be transferred to COMAL without change. But there are some differences – which is inevitable since COMAL has more facilities than Basic. In the listing below, the first explanation (italics) is for Basic; the second (bold) applies to COMAL.

Variables

String variables

Each string variable denoted by a '$' following the name (e.g. A$) can hold up to 255 characters.

Each string variable denoted by a '$' following the name (e.g. A$) must be explicitly dimensioned but can hold any number of characters. (e.g. DIM A$ OF 500)

Integer variables

Integer variables are denoted by a '%' following the name (e.g. A%). The amount of storage space reserved is identical to that of a real variable.

Integer variables are denoted by a '#' following the name (e.g. A#). The amount of storage space reserved is *less* than that for a real variable.

Variable names

The same name can be used for different variable types without confusion – so 'A$' and 'A' are allowed in the same program.

The same name *cannot* be used for different variable types

Array variables

Array variables default to a dimension of 10 if no explicit DIM statement is given.

An explicit DIM must be given.

Matrices

DIM MATRIX(100,10) will reserve space for 1111 values (100+1 rows by 10+1 columns).

DIM MATRIX(0:100,0:10) will reserve the same space as the Basic. If you are not using the elements in the 0 row and 0 column you can say DIM MATRIX(100,10) as in Basic.

Operators

Integer division

INT(A/B)

A DIV B

Remaindering

*A–INT(A/B)*B*

A MOD B

Relational

<= and =< are both allowed; >= and => are both allowed

<= only is allowed; >= only is allowed

Logical

NOT, AND, OR can be used for bitwise operations

NOT, AND, OR *cannot* be used for bitwise operation

The printer

Listing a program

OPEN1,4 : CMD 1
LIST
PRINT#1: CLOSE 1

SELECT "LP"
LIST
SELECT "DS"

Inbuilt functions

ASCII value

ASC("A")

ORD("A")

Free memory

PRINT FRE(0)

SIZE

Leftmost 10 characters

LEFT$(A$,10)

A$(1:10)

Rightmost 10 characters

RIGHT$(A$,10)

A$(x,y) where y is the endmost character position and x is endmost −10+1

MID$

MID$(A$,5,3) – return three characters of A$ starting from the fifth

A$(5:7)

Random integer between x and y

*X+INT((Y−X+1)*RND(0))*

RND(X,Y)

Files

Open a sequential file for reading
OPEN 8,8,8,"(filename),S,R"
OPEN 8,"(filename)",READ

Open a sequential file for writing
OPEN 8,8,8,"(filename),S,W"
OPEN 8,"(filename)", WRITE

Open a cassette file for reading
OPEN 8,1,0,"(filename)"
OPEN 8, "(filename)", UNIT 1,0,READ

Open a cassette file for writing
OPEN 8,1,1,"(filename)"
OPEN 8,"(filename)", UNIT 1,1,WRITE

Open a sequential file for appending
OPEN 8,8,8,"(filename)",S,A"
OPEN 8,"(filename)", APPEND

Open a relative file with record length of (length)
OPEN 8,8,8,"(filename),L"+chr$((length))
OPEN 8,"(filename)",RANDOM (length)

Open a file to the printer
OPEN 4,4
OPEN 4,"",UNIT 4,0,WRITE

Open a file for formatted output to the printer
OPEN 4,4,1
OPEN 4,"", UNIT 4,1,WRITE

Read from a sequential file
INPUT#8,A$
INPUT FILE 8: A$

Read part of sequential file
PRINT#15, "P"+CHR$(8)+CHR$(12)+CHR$(0)+CHR$(3)
INPUT#8,A$ – this will position the pointer to a relative file at record 12 byte 3 and read from that point up till the next chr$(13) into A$. It assumes channel 15 is open to the disk and that the relative file has been opened with secondary address 8.
No such problems in COMAL which is
INPUT FILE 4,12,3:A$

Write to a relative file
Similar except PRINT#8, A$ is used
In COMAL it's PRINT FILE 4,12,3: A$

Write to a sequential file
PRINT#8,A$
PRINT FILE 8: A$

Loading and saving programs

Load program from cassette
LOAD"(filename)"
LOAD"(filename)",1

Load program from disk
LOAD"(filename)",8
LOAD"(filename)"

Save program to cassette
SAVE"(filename)"
SAVE"(filename)",1

Save program to disk
SAVE"(filename)",8
SAVE"(filename)"

Load and RUN a program from disk
LOAD"(filename)",8: RUN
CHAIN"(filename)"

Disk handling

Command format
OPEN 15,8,15: PRINT#15,"(disk command)": CLOSE 15
PASS"(disk command)". The syntax of the disk command is identical for Basic and COMAL

Read a disk error message
OPEN 15,8,15: INPUT#15,ER,ER$,T,S: PRINT ER;ER$;T;S: CLOSE 15
STATUS

Read disk status after file access
INPUT#8,A$: INPUT#15,ER: PRINT ER (assumes channel 15 open)
INPUT FILE 8: A$
PRINT STATUS (8)

List a disk catalogue
LOAD"$",8: LIST (destroys program in memory)
CAT (does not destroy program in memory)

Pot Pourri

Setting a truth value of false
NO=0
NO=FALSE

Setting a truth value of true
NO=−1
NO=TRUE (in COMAL this has value +1)

One-line FOR statement
FOR I=1 TO 10: PRINT I: NEXT
FOR I=1 TO 10 DO PRINT I

I hope this will prove valuable in using COMAL rather than Basic: in addition to the above there are the structured programming modifications, but these were covered in the April issue. And all other aspects of Basic carry over to COMAL without change – so it's not really learning a new programming language at all.

A word of caution, however. The public domain versions of COMAL do not include GET, STR$, VAL, WAIT, USR or VERIFY. They can of course be simulated by writing specific procedures (although a procedure to GET from a disk file is not so easy!) The COMAL cartridge for the Commodore 64 will include the first three of these facilities, and linking machine code to COMAL will be much more comprehensive than with Basic.

If this article has persuaded you to try to COMAL and you want a copy, my offer still stands. COMAL is available for the Commodore 4032, 8032, 8096 and 64 computers (*not* Vic): I can supply copies on 4040, 8050 or 1541 disk formats: or on cassettes (C-60 at least, please), but I prefer to send disks if possible. Send your disk or cassette, with the return postage for 150 gms – preferably in stamps or International Reply Coupons (worth 20.5p each) if a resident of Eire or abroad – with details of your computer system, your name and address to: Brian Grainger, 73 Minehead Way, Stevenage, Herts SG1 2HZ.



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How we reproduce listings

We have two methods of presenting listings. When we can, we run them through a converter program that replaces the hieroglyphic control codes with more meaningful symbols.

When you see...	It means ...	And you ...
[CU]	*cursor up*	press the 'cursor up' key (shifted)
[CD]	*cursor down*	press the 'cursor down' key
[CL]	*cursor left*	press the 'cursor left' key (shifted)
[CR]	*cursor right*	press the 'cursor right' key
[HOM]	*cursor to the top lefthand corner*	press the HOME key
[CLS]	*clear*	press the CLR key (shifted)
[DEF]	*insert*	press the INSert key (shifted)
[BLK]	*change to black*	press the BLK key (CTRL and 1)
[WHT]	*change to white*	press the WHT key (CTRL and 2)
[RED]	*change to red*	press the RED key (CTRL and 3)
[CYN]	*change to cyan*	press the CYN key (CTRL and 4)
[PUR]	*change to purple*	press the PUR key (CTRL and 5)
[GRN]	*change to green*	press the GRN key (CTRL and 6)
[BLU]	*change to blue*	press the BLU key (CTRL and 7)
[YEL]	*change to yellow*	press the YEL key (CTRL and 8)
[REV]	*reverse on*	press the RVS ON key (CTRL and 9)
[OFF]	*reverse off*	press the RVS OFF key (CTRL and 0)
[SPC]	*space*	press the space bar; repeat the specified number of times

[G<key]	**press specified key together with CBM key**
[G>key]	**press specified key together with SHIFT key**

When you see any of these codes prefixed by a number, you must press the appropriate key the same number of times:

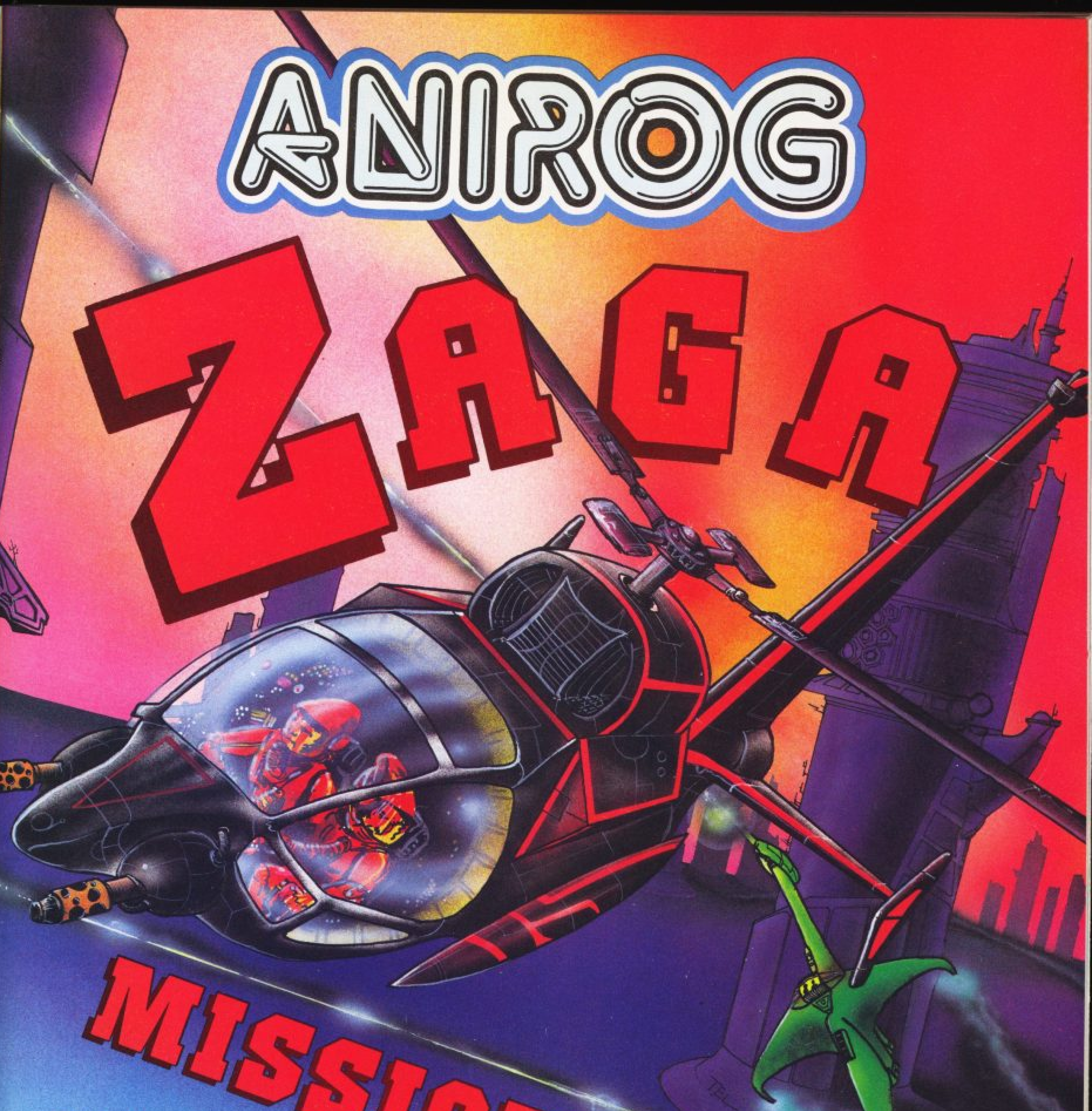
for example: **[3SPC]** means – press the spacebar three times
or
[5CD] means – press the 'cursor down' key five times

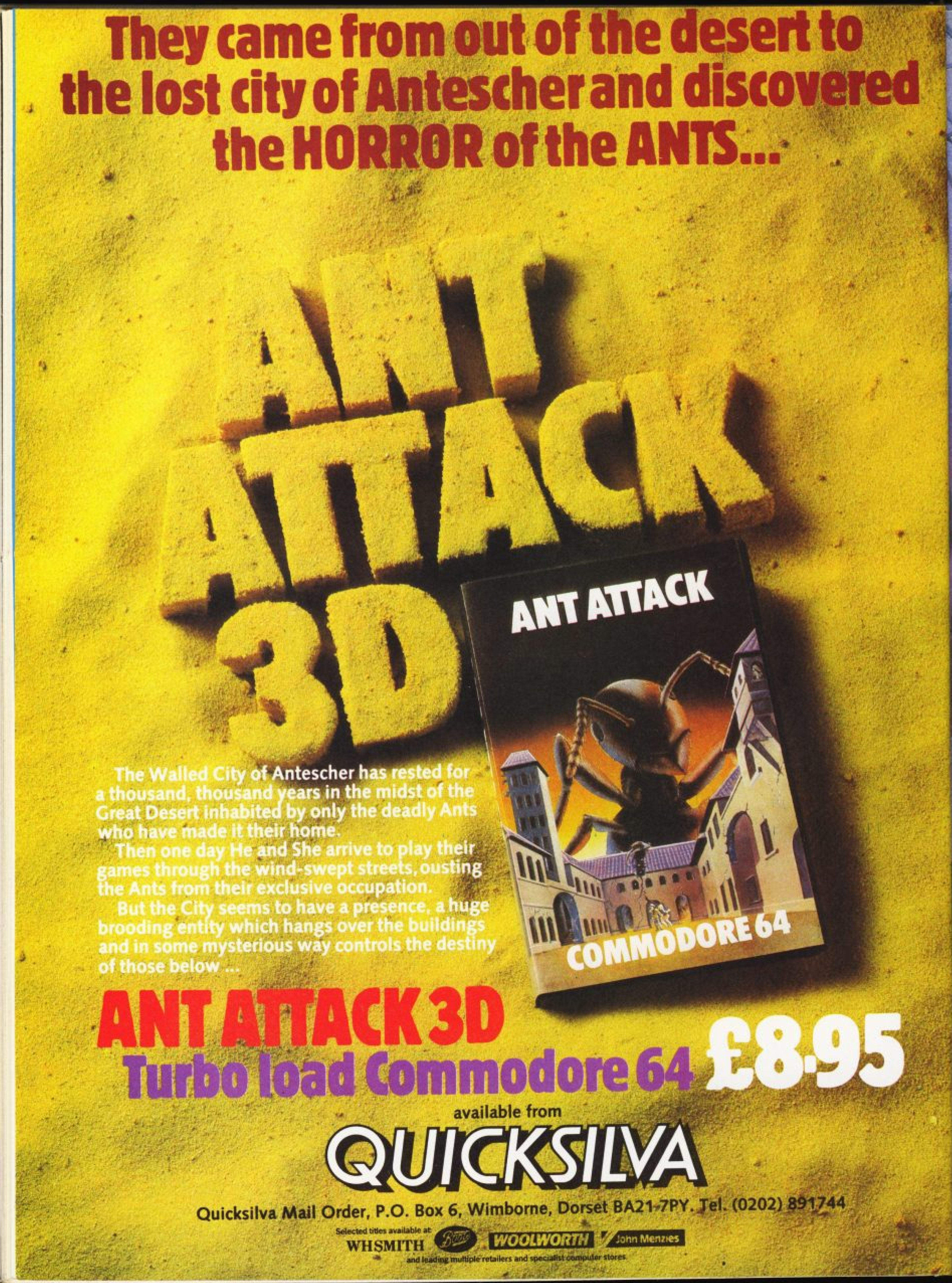
These listings we generally run out on a letter-quality printer, though, and conventional graphics can't be handled on a daisywheel. So some listings are done on a Commodore printer, in which case you may see the standard control codes:

```
CLR            ...   ■   (REVERSED HEART)
HOME           ...   ■   (REVERSED S)
RVS ON         ...   ■   (REVERSED R)
RVS OFF        ...   ■   (REVERSED UNDERSCORE)
CURSOR UP      ...   ■   (REVERSED SHIFTED ●)
CURSOR DOWN    ...   ■   (REVERSED Q)
CURSOR LEFT    ...   ■  (REVERSED UPWARD BAR - SHIFTED H)
CURSOR RIGHT   ...   ■  (REVERSED LEFT SQUARE BRACKET)

SET COLOUR TO
          BLACK  ...   ■   (REVERSED SHIFTED P)
          WHITE  ...   ■   (REVERSED E)
          RED       ...■   (REVERSED £)
          CYAN   ...   ■   (REVERSED COMMODORE-SHIFTED *)
          PURPLE ...   ■   (REVERSED COMMODORE-SHIFTED -)
          GREEN  ...   ■   (REVERSED UP ARROW)
          BLUE   ...   ■   (REVERSED LEFT ARROW)
          YELLOW ...   ■   (REVERSED PI SIGN)
THE FUNCTION KEYS CAN BE INCORPORATED INTO PRINT STATEMENTS TOO.
AS WITH THE OTHER NON-ALPHANUMERIC KEYS, THEY APPEAR AS SPECIAL"

SYMBOLS IN A LISTING
F1   ... ■                      F2   ... ■
F3   ... ■                      F4   ... ■
F5   ... ■                      F6   ... ■
F7   ... ■                      F8   ... ■
```


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Spymaster

by Albert van Aardt

Here's a little program for all you kids who need to send secret messages. It will work on both the Commodore 64 and the Vic-20.

Type it in, SAVE it, then RUN it. The program will ask you if you want to translate or interpret. Translate means that you type in your message, and the computer will display the message in code on the screen. Interpret does just the opposite: you type in the coded message and the computer will display the message in ordinary alphabet.

The secret of the program lies in **line 20**. You can jumble up the alphabet in any old way you like, as long as you use the same letters, numbers and punctuation marks as in **line 10**. Note the space in **lines 10 and 20**. Nobody can crack this code without a copy of the program – and as long as you use the same program to translate and interpret, you can quite easily understand your friends' secret messages.

```
    SPYMASTER!


10 A$="ABCDEFGHIJKLMNOPQRSTUVWXYZ 1234567890+-*/?.,!^@=:;><
20 B$="QWERTYUIOP@*^ASDFGHJKL:;=ZXCVBNM,./-+0PRINT9>8<716 5342!
30 PRINT"[CLS][2CD]1. TRANSLATE ALPHABET TO CODE."
40 PRINT"[2CD]2. INTERPRET CODE TO ALPHABET."
50 INPUT"[2CD]OPTION";O
60 IFO=2THEN100
62 IFO<>1THEN30
65 GETC$:IFC$=""THEN65
70 FORR=1TO52
72 IFMID$(A$,R,1)=C$THENPRINTMID$(B$,R,1);:R=52
80 NEXTR
90 GOTO60
100 GETC$:IFC$=""THEN100
110 FORR=1TO52
120 IFMID$(B$,R,1)=C$THENPRINTMID$(A$,R,1);:R=52
130 NEXTR
140 GOTO100

READY.
```



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A: Autocalc 64 copes easily with trignometrical functions, parenthesis and boolean logic as well as totalling and averaging.

Q: Which spreadsheet accepts complex conditional statements?
A: Autocalc 64 can handle statements as complex as IF a1<4,000 OR a1>8,000 AND a2 = 500 THEN b1=0.

Q: Which spreadsheet offers a flexible screen format?
A: Autocalc 64 allows you to select (i) column widths from 3 to 30 characters (ii) the number of rows/columns you need (iii) up to 2,000 cells of information (iv) text or numerical entries lined up to the right or the left, or a combination.

Q: Which spreadsheet offers a choice of numerical formats?
A: Autocalc 64 gives you a choice of (i) integers (ii) floating decimal point (iii) currency (iv) any combination of these.

Q: Which spreadsheet offers a full 'replicate' facility?
A: Autocalc 64 has an advanced replication function for transferring text, data, formulae or conditional statements from any cell (or block of cells) to any other(s) without monotonous retyping. A 'go to' facility will take the cursor instantly to any cell of your choice — saving time.

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A: Autocalc 64 is designed to guide you — helpful error reports diagnose input or formulae errors. A full demonstration program and comprehensive instructions are included.

Q: Which spreadsheet is compatible with standard Commodore printers?
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Named Subroutine Calls In Commodore Basic

by M.C. Hart

All Basic programmers know that it's possible to transfer the sequence of a program by a GOTO command or call a specific subroutine with a GOSUB. But GOTOs and GOSUBs reference particular line numbers such as GOSUB 1000 and this does not help another reader of the program to realise the purpose of the subroutine that is being called. Actual authors of the program can forget their own logic after a week or so.

Other languages such as Pascal enable procedures to be CALLed by name: for example CALL PRINTOUT. And this makes the programs easier to read and to de-bug. Some Basics (notably BBC Basic) allow one to set up procedures and to call them by name. So Commodore Basic starts to look very limited when compared with this opposition.

To rectify the situation, here's a routine which will allow you to call a subroutine by name. The interpreter will evaluate any expression so it is quite possible to include a complex arithmetic expression after the GOSUB or GOTO command if you like. This is sometimes known as a COMPUTED GOSUB/GOTO and again some Basics (but not CBM) specifically allow it. The occasions when it is most likely to be used will be after a menu – if the variable K holds the choice selected from the menu then one can then call subroutines by GOSUB K*1000. This can be done already with the ON K GOSUB n, n1, n2 approach and the occasions when one could use a genuinely computed GOSUB/GOTO may be limited.

The routine really does come into its own when you wish to name a GOSUB or GOTO. These will have to be defined first (see line 10 of the listing) and the interpreter will only recognise the first two letters. And the name should not incorporate keywords such as TO and THEN.

```
1 REM NAMED-GOSUB/GOTO  M.C.HART
2 :
5 FORJ=828 TO 988:READ X:T=T+X:POKEJ,X:NEXT
6 IF T<> 18487 THEN PRINT"DATA ERROR":END:REM C-64
7 REM :T=18763 FOR VIC
8 :
10 SYS 828:REM TURNS ON:SYS 845 TURNS OFF
20 HELLO = 100
30 :
40 FOR J=1 TO 10:PRINT J:NEXT
50 GOSUB HELLO
60 PRINT"[CD]--END--":END
70 :
100 PRINT"HELLO"
110 GOSUB HELLO*2
120 RETURN
130 :
200 PRINT"THERE":
210 GOSUB HELLO*3
220 RETURN
230 :
300 PRINT"SAILOR!"
310 GOTO 200*2
320 PRINT"ABORT!"
330 RETURN
340 :
400 PRINT"[CD]O.K.!"
410 GOTO 330
420 :
480 REM C-64 DATA
490 :
500 DATA 162,5,189,71,3,149,115,202
510 DATA 16,248,96,76,88,3,32,162
520 DATA 227,162,5,189,162,227,149,115
530 DATA 202,16,248,96,32,118,0,201
540 DATA 142,240,59,201,137,240,107,201
550 DATA 141,208,48,104,141,58,3,104
560 DATA 141,59,3,169,3,32,251,163
570 DATA 165,123,72,165,122,72,165,58
580 DATA 72,165,57,72,169,141,72,32
590 DATA 162,227,32,158,173,32,247,183
600 DATA 32,163,168,173,59,3,72,173
610 DATA 58,3,72,76,121,0,169,255
620 DATA 133,74,32,138,163,154,201,141
630 DATA 240,11,162,12,44,162,17,76
640 DATA 55,164,76,8,175,104,104,133
650 DATA 57,104,133,58,104,133,122,104
660 DATA 133,123,32,6,169,152,24,101
670 DATA 122,133,122,144,2,230,123,76
680 DATA 174,167,32,162,227,32,158,173
690 DATA 32,247,183,32,163,168,76,121,0
770 :
780 REM VIC DATA
790 :
800 DATA 162,5,189,71,3,149,115,202
810 DATA 16,248,96,76,88,3,32,135
820 DATA 227,162,5,189,135,227,149,115
830 DATA 202,16,248,96,32,118,0,201
840 DATA 142,240,59,201,137,240,107,201
850 DATA 141,208,48,104,141,58,3,104
860 DATA 141,59,3,169,3,32,251,195
870 DATA 165,123,72,165,122,72,165,58
880 DATA 72,165,57,72,169,141,72,32
890 DATA 135,227,32,158,205,32,247,215
900 DATA 32,163,200,173,59,3,72,173
910 DATA 58,3,72,76,121,0,169,255
920 DATA 133,74,32,138,195,154,201,141
930 DATA 240,11,162,12,44,162,17,76
940 DATA 55,196,76,8,207,104,104,133
950 DATA 57,104,133,58,104,133,122,104
960 DATA 133,123,32,6,201,152,24,101
970 DATA 122,133,122,144,2,230,123,76
980 DATA 174,199,32,135,227,32,158,205
990 DATA 32,247,215,32,163,200,76,121,0
```

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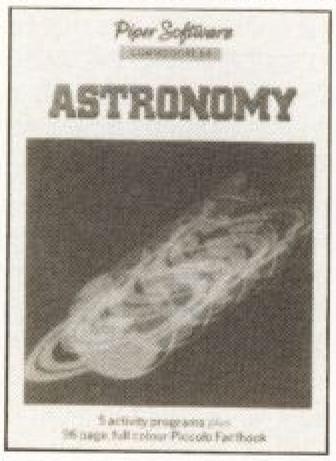
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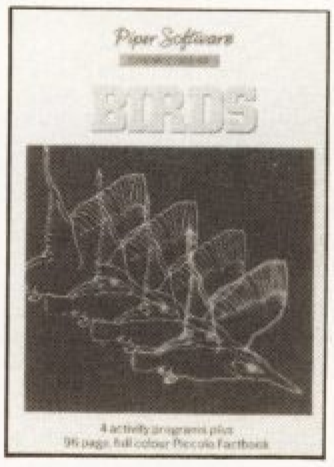
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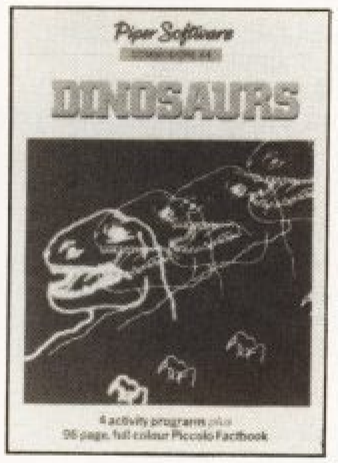


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To check this, you should define all the subroutine names early on in the program and if they are illegal then the interpreter will give a SYNTAX ERROR MESSAGE IN ... message. Having defined the subroutine name you should then be careful not to let other variables get mixed up with it, of course, but it is possible to manipulate it in various ways. In the demo program the variable HELLO is defined as having a value of 100 and this subroutine calls other subroutines known as HELLO*2 and HELLO*3 as well as a computed GOTO before returning to the end.

Construction of the program

The program works by looking for the tokens for GOTO, GOSUB and RETURN in the Basic text and then diverting the normal course of the machine code instructions through this routine. It is turned 'on' by calling **SYS 828** and normal operation is assured by calling **SYS 845**. It's fairly lengthy because quite extensive sections of the machine code instructions that process these tokens have to be copied into RAM so that they can be modified to suit our purposes. Readers of the recent series on wedges will realise that this routine works in precisely that way by 'wedging' itself into the operating system and allowing one to perform operations upon the keywords before the normal interpreter has a chance to act.

But there are a few restrictions. As already mentioned, variable names must be two letters and they cannot include keywords. In addition, the ON ... GOTO and ON ... GOSUB commands will now crash as the processing of these commands would have required even more code. However it is possible to get round this restriction quite easily. Turn 'off' the routine with a **SYS 845** call just before you use the ON ... GOSUB or ON ... GOTO and then reactivate it with a **SYS 828**.

For interested machine code programmers a disassembly is given for the Commodore 64. For Vic programmers another set of data statements is included from **lines 800-990**. Merely ignore the routines provided for the Commodore 64 from **lines 500-690** and substitute the appropriate checksum figure from line 7 into line 6.

Renumbering the program

Normally renumbering the program would alter the location of all of the subroutines and the named subroutine program developed here would not work. However there is a way round this which is quite easy and will enable you to renumber programs at will.

- Load program but do not run it.
- For each of the names that you have allocated to a sub-routine, put a GOTO xxxx where xxxx is the line number at which the routine resides. We are not going to RUN the program with these GOTOs but use them as an aid in the renumbering process.
  e.g. 20 HELLO = 100 becomes
  20 HELLO = 100: GOTO 100
- Use the renumber routine that you already have.
- Now see what all the GOTOs at the end of your variable names have become. This is obviously the location of all your renumbered and named sub-routines. Change the appropriate value and delete the GOTO before running and/or saving.

This technique will work quite satisfactorily if you have given all of your subroutines simple variable names. However a name such as HELLO*2 will obviously not survive this process so if you are going to renumber your program at any stage it is better to stick to straightforward subroutine names.

A 'quick and dirty' method

Finally, there is a way in which you can cheat without bothering to amend the interpreter in any way. If you were to include a line in your program such as GOSUB 1000 (PRINTOUT) or GOTO 5000 (END) then the interpreter will act upon the digits immediately following the keyword but will not generate a syntax error when it meets any alphanumeric characters. This means that it's possible without any change to label all your subroutines or GOTOs with a name which, as a matter of policy, should match up with a REM at the start of the subroutine. This is a good and easy way to keep your programs well documented! ■

```
B*
    PC   SR AC XR YR SP
.;0008 30 4F 4F 00 F6
.
033C A2 05       LDX #$05
033E BD 47 03    LDA $0347,X
0341 95 73       STA $73,X
0343 CA          DEX
0344 10 F8       BPL $033E
0346 60          RTS
0347 4C 58 03    JMP $0358
034A 20 A2 E3    JSR $E3A2
034D A2 05       LDX #$05
034F BD A2 E3    LDA $E3A2,X
0352 95 73       STA $73,X
0354 CA          DEX
0355 10 F8       BPL $034F
0357 60          RTS
0358 20 76 00    JSR $0076
035B C9 8E       CMP #$8E
035D F0 3B       BEQ $039A
035F C9 89       CMP #$89
0361 F0 6B       BEQ $03CE
0363 C9 8D       CMP #$8D
0365 D0 30       BNE $0397
0367 68          PLA
0368 8D 3A 03    STA $033A
036B 68          PLA
036C 8D 3B 03    STA $033B
036F A9 03       LDA #$03
0371 20 FB A3    JSR $A3FB
0374 A5 7B       LDA $7B
0376 48          PHA
0377 A5 7A       LDA $7A
0379 48          PHA
037A A5 3A       LDA $3A
037C 48          PHA
037D A5 39       LDA $39
037F 48          PHA
0380 A9 8D       LDA #$8D
0382 48          PHA
0383 20 A2 E3    JSR $E3A2
0386 20 9E AD    JSR $AD9E
0389 20 F7 B7    JSR $B7F7
038C 20 A3 A8    JSR $A8A3
038F AD 3B 03    LDA $033B
0392 48          PHA
0393 AD 3A 03    LDA $033A
0396 48          PHA
0397 4C 79 00    JMP $0079
039A A9 FF       LDA #$FF
039C 85 4A       STA $4A
039E 20 8A A3    JSR $A38A
03A1 9A          TXS
03A2 C9 8D       CMP #$8D
03A4 F0 0B       BEQ $03B1
03A6 A2 0C       LDX #$0C
03A8 2C A2 11    BIT $11A2
03AB 4C 37 A4    JMP $A437
03AE 4C 08 AF    JMP $AF08
03B1 68          PLA
03B2 68          PLA
03B3 85 39       STA $39
03B5 68          PLA
03B6 85 3A       STA $3A
03B8 68          PLA
03B9 85 7A       STA $7A
03BB 68          PLA
03BC 85 7B       STA $7B
03BE 20 06 A9    JSR $A906
03C1 98          TYA
03C2 18          CLC
03C3 65 7A       ADC $7A
03C5 85 7A       STA $7A
03C7 90 02       BCC $03CB
03C9 E6 7B       INC $7B
03CB 4C AE A7    JMP $A7AE
03CE 20 A2 E3    JSR $E3A2
03D1 20 9E AD    JSR $AD9E
03D4 20 F7 B7    JSR $B7F7
03D7 20 A3 A8    JSR $A8A3
03DA 4C 79 00    JMP $0079
```

Commodore 64 Cat Chase

by Neil Phillips

This simple game is guaranteed to provide hours of fun for all the family.

The action takes place in a randomly drawn maze, and your task is to escape via the exit without being caught in the clutches of the roving cat.

As usual, take care when typing this program in, and save off before running!



Program structure:

10 –	Set beginning of screen RAM and difference between colour and screen RAM
20 –	Set screen and border colours
80 –	Pick random starting position for the mouse, define exit position
90 –	GOSUBs a routine starting at line 8000 for instructions on game play
100-250 –	Maze generation routine
270 –	POKEs "mouse" into random starting position, checking to be sure it is a space character
310 –	POKEs "cat" character onto screen at proper location
1010-1025 –	Moves cat through maze, checking for collisions with mouse
1100 –	Gets value of present key being pressed
1110-1140 –	If movement key, will add proper amount to mouse position
1160 –	Checks to see if cat has hit mouse; if so, branches
1170 –	Checks to see if mouse has reached exit; if so, branches
1180 –	If new position of mouse is a wall, stay in old position
1500 –	Moves mouse appropriately as earlier determined
1510 –	Short pause
1600 –	Old position is now equal to position just moved to
1700 –	POKEs exit character
2000 –	Goes back through loop
5000-5010 –	PRINTs caught message, goes to ending screen
6000 –	PRINTs escaped message
7000-7030 –	Final screen display
7050 –	Clears keyboard buffer to prevent extra keystrokes from appearing on screen, then ENDs program
8000-8040 –	Game instructions
8050 –	Waits for the <RETURN> key to be pressed
8060 –	RETURNS from subroutine

```
C-64 CAT CHASE


10 S=1024:C=54272
20 POKE53280,3:POKE53281,1
80 P=INT(RND(.)*960)+1046:OP=P:E=S+82
90 GOSUB8000
100 DIMA(3)
110 A(0)=2:A(1)=-80:A(2)=-2:A(3)=80
120 WL=160:HL=32:A=S+82
130 PRINT"[CLS][BLU][22G>SPC][18SPC]";
140 FORI=1TO23
150 PRINT"[CR][REV][37SPC][OFF][G>SPC] ";
160 NEXT
210 POKEA,4
220 J=INT(RND(.)*4):X=J
230 B=A+A(J):IFPEEK(B)=WLTHENPOKEB,J:POKEA+A(J)/2,HL:A=B:GOTO220
240 J=(J+1)*-(J<3):IFJ<>XTHEN230
250 J=PEEK(A):POKEA,HL:IFJ<4THENA=A-A(J):GOTO220
270 P=INT(RND(.)*960)+S:OP=P:IFPEEK(P)<>32THEN270
310 POKEA,81:POKEA+C,0:J=2
1010 FORK=1TO2
1015 B=A+A(J)/2:IFPEEK(B)=HLTHENPOKEB,81:POKEB+C,0:POKEA,HL:A=B:J=(J+2)+4*(J>1)
1017 J=(J-1)-4*(J=0)
1020 IFB=PTHEN5000
1025 NEXT
1100 D=PEEK(203)
1110 IFD=23THENP=P+40
1120 IFD=10THENP=P-1
1130 IFD=18THENP=P+1
1140 IFD=9THENP=P-40
1160 IFA=PTHEN5000
1170 IFP=ETHEN6000
1180 IFPEEK(P)=160THENP=OP:GOTO1700
1500 POKEP,42:POKEP+C,2:IFD<>64THENPOKEOP,32
1510 FORK=1TO10:NEXT
1600 OP=P
1700 POKEE,5
2000 GOTO1010
5000 PRINT"[CLS][CD][BLU]YOU HAVE BEEN CAUGHT BY THE CAT..."
5100 GOTO7010
6000 PRINT"[CLS][CD][BLU]YOU HAVE ESCAPED UNHARMED..."
7010 PRINT"[3CD]IF YOU WISH TO TRY THIS SUPER-SIMPLE"
7020 PRINT"GAME AGAIN, ENTER "CHR$(34)"RUN"CHR$(34)".[2CD]"
7030 PRINT"[YEL]BYE![RED]"
7050 FORK=1TO11:GETA$:NEXT:CLR:END
8000 PRINT"[CLS][2CD][15CR][REV][RED]CAT[2SPC]CHASE[BLU][3CD]"
8010 PRINT"YOU (*) WILL BE PLACED AT RANDOM IN A"
8015 PRINT"MAZE, AND MUST REACH THE EXIT (E).[2SPC]BUT"
8020 PRINT"WATCH OUT FOR THE CAT ([G>Q]), BECAUSE IF"
8025 PRINT"YOU HIT HIM YOU WILL DIE.[CD]"
8030 PRINT"USE KEYS A, X, D, AND W TO MOVE."
8040 PRINT"[5CD][4CR][REV][BLK]PRESS <RETURN> TO BEGIN THE GAME"
8050 GETA$:IFA$<>CHR$(13)THEN8050
8060 RETURN
```

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Two routines for the Vic

by David Gardiner

Want to know how to reverse the screen on your Vic, or perhaps retrieve a program you've NEWed?

Here are three useful machine-code routines from David Gardiner to do just that. They're all listed in Basic, with an accompanying disassembly of the code. Whether you're a Basic or an Assembler enthusiast, just type them in.

Reverse

This routine for the unexpanded Vic will reverse the screen instantly. The routine is positioned in the spare memory at 688 – 716. It is called with SYS 688.

How it works: when the SYS call is executed, each byte of the screen is EORed with 128, thus inverting the highest bit. Remember that you will see no difference if the writing colour is the same as the screen colour. The routine uses zero page locations 0 and 1.

The disassembly of the code is as follows:

```
02B0 LDA  #$00      A9 00
02B2 STA  $00       85 00
02B4 LDA  #$1E      A9 1E
02B6 STA  $01       85 01
02B8 LDY  #$00      A0 00
02BA LDA  ($00),Y   A0 00 ;NEXT
02BC EOR  #$80      49 80
02BE STA  (#$00),Y  91 00
02C0 INC  $00       E6 00
02C2 BNE  NEXT      D0 F6
02C4 INC  $01       E6 01
02C6 LDA  $01       A5 01
02C8 CMP  #$20      C9 20
02CA BNE  NEXT      D0 EE
02C9 RTS            60
```

Retrieve

This routine for any Vic will retrieve a NEWed program. It is a simple piece of code, but very useful. It is positioned in the spare memory at **684 – 764**. The routine is called with **SYS 684** (followed by LIST to see the program).

How it all works: when the SYS call is executed, 16 is stored in the start of Basic+2, which is the high byte of the first link address. The code then jumps to the routine as **$C533** to re-chain Basic lines. Then it searches through the Basic to find the end (3 zero bytes) and resets the numeric variables and array pointers to point to the end of the program.

Important: the routine will not work if you have already started to type in a new program, or if you have assigned any variables since the NEW. The routine itself performs a CLR.

If, when you call the routine, you get a SYNTAX ERROR, then the code has not been able to find the end of the program.

```
100 FORT=684 TO 764
110 READA
120 POKET,A
130 NEXT
140 DATA169, 0, 133, 0, 160, 1,
    169, 16, 145, 43, 32, 51, 197,
    169, 1, 133, 1
150 DATA165, 44, 133, 2, 160, 0,
    177, 1, 240, 23, 169, 0, 133,
    0, 230, 1, 165, 1
160 DATA197, 55, 208, 240, 230,
    2, 165, 2, 197, 56, 208, 232,
    76, 8, 207, 230
170 DATA0, 165, 0, 201, 3, 208,
    229, 230, 1, 208, 2, 230, 2,
    164, 1, 166, 2, 132, 45
100 DATA132, 47, 132, 49, 134,
    46, 134, 48, 134, 50, 96
```

The disassembly of the code is as follows:

```
02AC LDA  #$00      A9 00
02AE STA  $00       85 00
02B0 LDY  #$01      A0 01
02B2 LDA  #$10      A9 10
02B4 STA  ($2B),Y   91 2B
02B6 JSR  $C533     20 33 C5 ;RECHAIN BASIC
02B9 LDA  #$01      A9 01
02BB STA  $01       85 01
02BD LDA  $2C       A5 2C
02BF STA  $02       85 02
02C1 LDY  #$00      A0 00
02C3 LDA  ($01),Y   B1 01    ;GETBYTE
02C5 BEQ  GOTZERO   F0 17
02C7 LDA  #$00      A9 00
02C9 STA  $00       85 00
02CB INC  $01       E6 01    ;INCPTRS
02CD LDA  $01       A5 01
02CF CMP  $37       C5 37
02D1 BNE  GETBYTE   D0 F0
02D3 INC  $02       E6 02
02D5 LDA  $02       A5 02
02D7 CMP  $38       C5 38
02D9 BNE  GETBYTE   D0 E8
02DB JMP  $CF08     4C 08 CF ;PRINT SYNTAX ERROR
02DE INC  $00       E6 00    ;GOTZERO
02E0 LDA  $00       A5 00
02E2 CMP  #$03      C9 03
02E4 BNE  INCPTRS   D0 E5
02E6 INC  $01       E6 01
02E8 BNE  RSTPTS    D0 02
02EA INC  $02       E6 02
02EC LDY  $01       A4 01    ;RSTPTS
02EE LDX  $02       A6 02
02F0 STY  $2D       84 2D
02F2 STY  $2F       84 2F
02F4 STY  $31       84 31
02F6 STX  $2E       86 2E
02F8 STX  $30       86 30
02FA STX  $32       86 32
02FC RTS            60
```

Managing to run your home?

Abrasco's Home Manager reviewed

by Ken Ryder

Remember when you were justifying buying a computer to your spouse, your parents, yourself and the Almighty? Well, one of the persuasive arguments you could have used would be that it can solve your accounts problems, keep records, an address book, do calculations and all kinds of other things.

Abrasco has introduced a suite of five programs, collectively called Home Manager, which cover all the above applications. Ken Ryder finds out whether, at £12.50 on tape and £15 on disk, this budget package can solve your domestic problems.



Each program in the suite is menu driven, and all are of a similar format. So once you've mastered one, the others follow naturally. Output from all the four main programs can be printed, but only to Commodore's own serial printers: the 1515/1525 or equivalents. The files created are sequential; but one caveat, since there are no disk handling facilities, if you use a filename which already exists, it will be overwritten without warning.

Address Manager

The first of the quintet is a program for storing and retrieving names, addresses and telephone numbers. There is enough space for two telephone numbers per name, perhaps one for home and another for work. Once the data has been entered, the address for a particular surname can be searched for and displayed. It may also be edited or deleted when friends move house – or fall out of favour. If the exact spelling is not known the search can be made on the first two characters of the surname only. Alternatively the addresses of all names beginning with a specified character can be listed.

Individual addresses can be selected for printing, or all the addresses can be sent to the printer in either label or list format, with or without telephone numbers. Just imagine, at Christmas you could impress your friends by commanding your 64 to print out a load of sticky labels for your cards.

The system is capable of storing up to 250 average sized records, and gives a warning when remaining memory falls below 500 bytes. A very small business with a standard mailing list could possibly use this program to good effect. But it should be noted that the addresses can only be sorted by surname so you cannot just print labels for customers based on a town or county; all your clients in Manchester, for example.

Diary Manager

The events which can be stored in Diary Manager are divided into two categories, special occasions and daily appointments. There are only four classes of special event: birthdays, weddings, engagements and the ominous 'other'. A few more headings would have been useful here such as anniversary or AGM, in addition to the all encompassing 'other'. Mundane daily events are associated with a time, specified on the 24 hour clock, a name and an event. The event must be fairly concise as it can only be described by 24 characters.

When all the entries have been made they can be searched in a number of ways: for dates to remember, for all entries for a given date, by name or the entries may be browsed through page by page.

When deleting an entry, the date is requested and all the entries for that day are displayed, each one may be deleted or retained as required. All, or a specified number of entries from a given date may be printed. In addition to loading and saving the data to disk or tape, just the special events may be loaded so that regular annual functions can be transfered from year to year – like birthdays, or the day your cat had kittens.

Expense Manager

Monthly expenses can be recorded with this package under 15 headings. But ten of the headings are already determined by the software, such as *mortgage/rent*, *groceries*, and *clothes*. The remainder are user definable. Some of the system headings are a bit odd (*miscellaneous* and *clothes*) whilst there are some more useful headings like *gas* and *rates* missing but you can include these in the user definable ones.

Data is entered under each heading for each month, including the date and method of payment. Unfortunately there are only four methods of payment to choose from, *Cash*, *Cheque*, *Credit Card* and, you guessed it, the *Other*. Personally I pay many of my monthly bills by standing order or direct debit through the bank and would like to have seen these in the options, rather than the vague 'other'. Any entry may be deleted; in fact this is the only way to alter a record after input – it must be deleted and then rewritten.

To delete the type of expense, date and amount must be specified. The record is then listed for checking before deletion.

The data can be analysed and displayed in three ways: by month for all 15 expenses together with the percentage of the total expenditure that each heading represents, and the yearly total. A single expense in a month can be viewed showing the date, amount and method of payment – in my case usually the 'other'. Finally the titles for each expense over the year can be

displayed, together with a percentage breakdown and grand total (how depressing). All of the above analyses can be sent to the printer instead of the screen.

Bank Manager

Bank Manager enables you to produce your own monthly bank statement. First, bank details such as the branch, account number and the present balance are entered. Then withdrawals by cheque or other means, such as standing orders, direct debits, credit card and yes, the 'other'. Deposits can be entered, and deleted at will. (deletions are listed for verification before removal).

There are several methods of sorting all the data: details of a cheque can be found by cheque number, and other types of transaction can be located by specifying the date and amount. Alternatively a starting date is specified and all the records before or after this date can be browsed through.

The most impressive facility is the itemised statement that's produced of each transaction from a given date, page by page. Credit entries are shown in green, debits are highlighted in white and overdrawn figures appear in reverse characters – so when you're in the red you're in reverse.

A printed bank statement can be produced for all, or just a certain number of entries from a specified date. The loading and saving facility offers a security code. When saving data the user is prompted for a four figure security code and filename. The data is then saved and may only be reloaded if the correct security code is given, so don't forget it!

Loan Calc

This is the smallest program and is used to forecast the cost of a loan against three variables: the principle, the interest rate, and the repayment period in years. The interest rate is based on the flat rate not the APR (annual percentage rate). The total cost, monthly payments, and total interest paid are all displayed. Any or all of the variables may be changed as desired. This is a useful program to help decide the best way to spread the cost of your car, furniture – or even your Commodore 64.

Documentation

The instructions for all the programs are contained in a rather small six page booklet. It is very brief, but all the information is to the point, and in any case, the program menus are self explanatory and shouldn't cause any problems.

Conclusions

All the programs are written in Basic and are not protected so you could possibly tailor them to your own particular idiosyncrasies. For instance, you could replace the dreaded 'other' with something more profound, or change some of the expense headings.

Generally the screen displays are all rather bland and a few audible prompts would not have gone amiss. To make full use of the *Diary* and *Expense Managers*, you really need a printer to take a hard copy reference. It is much more convenient to look through your printouts than to load the program, load the data and search it, especially if the file is on cassette. Under test the menus seem fairly idiot proof, but the RUN/STOP and RESTORE keys are not disabled so be careful. At £12.50 for tape and £15.00 for disk the package is good value and should make a worthwhile addition to any software library.

Under review	Home Manager
Description:	Suite of packages for managing home accounts, diary and addresses for the Commodore 64
Supplier:	Abrasco
Address:	The Grange Barn Pikes End Eastcote, Middx
Telephone:	01-866 2518
Summary:	Good value for money
Price:	£12.50 (tape) £15 (disk)



CLIFF HANGER

AUTHOR – JAMES DAY ORIGINAL MUSIC – BRIAN DOE

Thrill to the cartoon style action of Cliff Hanger, a really original, Wild West game. As Cliff the hero, you've got to stop the bandito shooting up the canyon. But with its own brand of wacky cartoon action fun, things simply aren't as they seem in Cliff Hanger. For a start, the boulder you throw at the ol' bandito may just come bouncing back at you.

Cliff Hanger incorporates all the elements that have made New Generation games best sellers for the Spectrum, such as original ideas, superb graphics and hilarious happenings – but now it's available first for the Commodore 64.

Featuring 50 separate screens, three levels of difficulty, one or two players scoring, Hall of fame and joystick compatibility or user defined keys, Cliff Hanger is set to be **THE** Commodore games playing sensation. Available from any good software store for just **£7.95.**

Selected titles of New Generation Software are available from your local computer store and larger branches of: John Menzies WHSMITH Boots WOOLWORTH spectrum



Shoot the Rapids

AUTHOR – PAUL BUNN

Ever wondered what it would be like to face the fierce white water in a top class canoeist slalom run? Well wonder no more because you can enjoy the fast action thrill of competitive canoeing from the comfort of your own armchair with Shoot the Rapids.

It's a game that involves real skill because you must move your joystick to simulate paddling action. You must get through the gates of the slalom course in the fastest time possible, while avoiding the river bank and rocks. There are also extra hazards like rogue speed boats and interfering beavers to worry about.

This multi level game features increasingly difficult river courses with superb graphics and smooth scrolling along the river. Qualifying times have to be reached to move onto the next course.

With Hall of Fame, one or two player scoring and joystick compatibility, Shoot the Rapids is probably the best sports action simulation game devised to date. Available from any good software store for just **£7.95.**

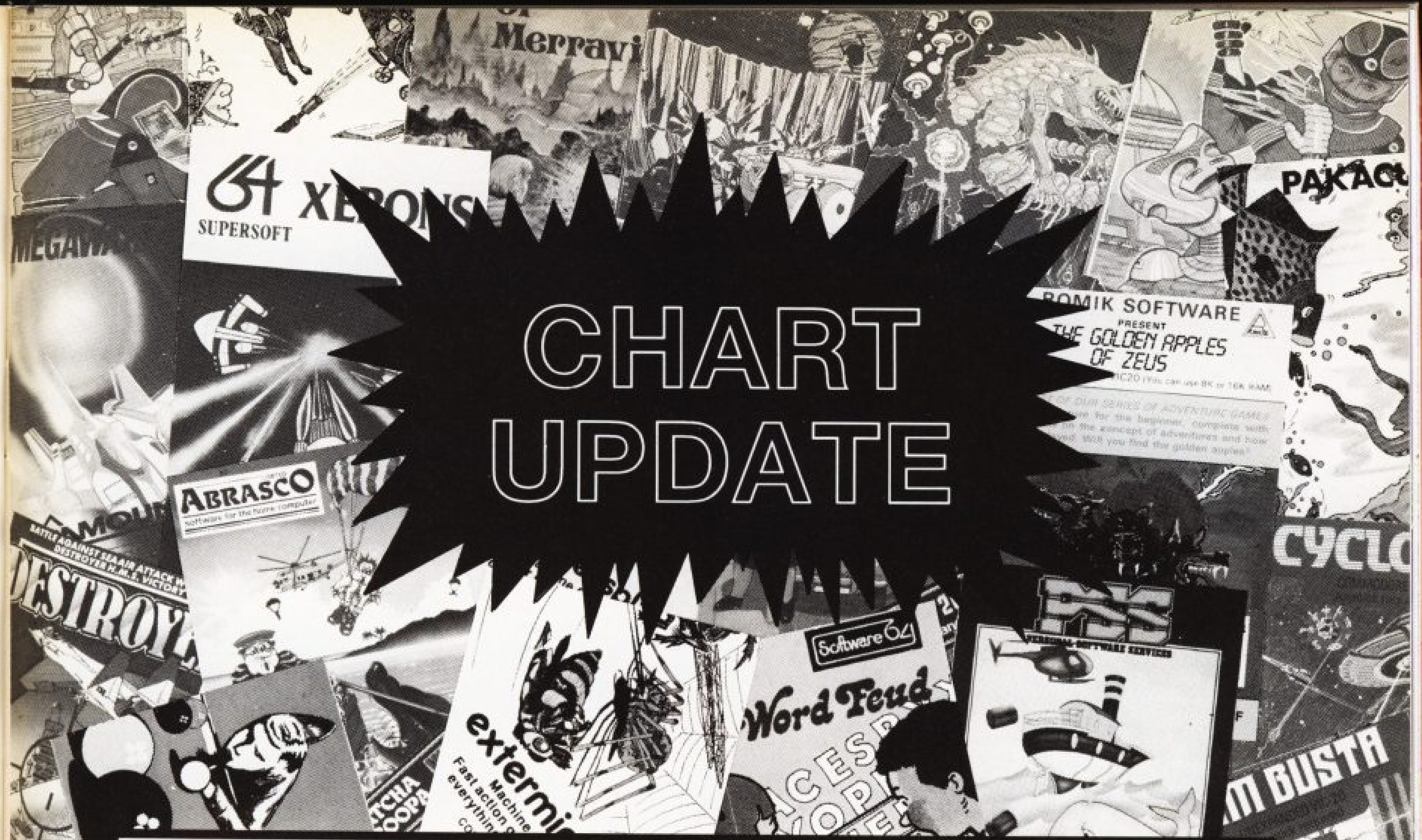
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CHART UPDATE



CBM64 — OCTOBER

1	(5)	Daley's Decathlon	Ocean
2	(2)	Decathlon	Activision
3	(2)	Beach Head	US Gold
4	(–)	Monty Mole	Gremlin
5	(–)	Zim Sala Bim	Melbourne
6	(–)	Death Star Interceptor	System 3
7	(–)	Kokotoni Wilf	Elite
8	(8)	International Football	Commodore
9	(6)	Encounter	Novagen
10	(3)	Arabian Nights	Interceptor
11	(–)	Havoc	Dynavision
12	(–)	Pitfall 11	Activision
13	(14)	Strip Poker	US Gold
14	(–)	Hero	Activision
15	(4)	Micro Olympics	Database
16	(–)	Evil Dead	Palace
17	(–)	River Raid	Activision
18	(15)	Manic Miner	Soft Projects
19	(16)	Cavelon	Ocean
20	(–)	Astro Chase	Statesoft

TOP 3 MANUFACTURERS:

ACTIVISION
US GOLD
OCEAN

VIC-20 — OCTOBER

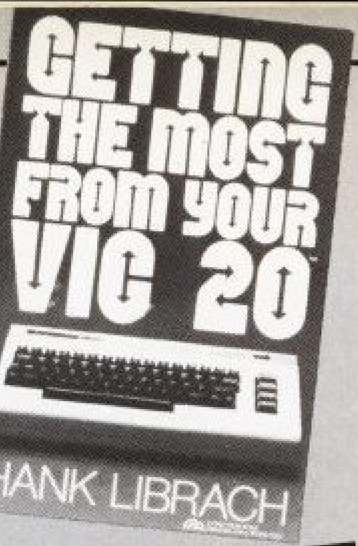
1	(3)	Chariot Race	Microantics
2	(–)	Psycho Shopper	Mastertronic
3	(–)	Snooker	Visions
4	(–)	Crazy Kong	Interceptor
5	(1)	Flight Path 737	Anirog
6	(-)	Maze Gold	Visions
7	(5)	Undermine	Mastertronic
8	(9)	Wiz and Princess	Melbourne
9	(15)	Bongo	Anirog
10	(–)	New York Blitz	Mastertronic
11	(7)	Sub Hunt	Mastertronic
12	(4)	Punchy	Mr Micro
13	(11)	Tower of Evil	Creative Sparks
14	(19)	Flight 015	Ferranti
15	(10)	Duck Shoot	Mastertronic
16	(12)	Computer War	Creative Sparks
17	(2)	Vegas Jackpot	Mastertronic
18	(–)	Rapier Punch	Commodore
19	(13)	Jet Pac	Ultimate
20	(6)	Hell Gate	Llamasoft

TOP 3 MANUFACTURERS:

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COMPILED BY RAM/C, LONDON
Data represents September sales from 250+ specialist retailers

Take five for



Getting the most from your Vic 20

This book, as the title suggests, is supposed to cover a great number of applications for the Vic, and one assumes there'll be a great deal of explanation on just how to use your Vic in a fruitful way.

The book is split into three sections; the first is entitled Getting to know your Vic and covers a range of topics including printing, The Vic clock, programmable function keys – these are the most worthwhile parts of this section.

Section two is entitled Applications Programs and covers applications like managing money and calculating loans. The best of this section is a logic simulator, which is very elementary, but interesting.

The last section is the Appendix which, as expected, covers the usual screen, colour and ASCII maps and codes, followed by a useful index.

So for your £8.95 you get 136 pages of very well presented listings and text. And the text does give you an awful lot of information about the areas of the Vic that are covered. But the programs are rather old hat and simple, at least they seem to be 'bug-free'.

The real problem is that the book is very simple and is as Prentice Hall say aimed at the beginner – probably the younger beginner. Even so it does not really contain enough to make it a good buy and would not have been three years ago.

The Book:	Getting the most from your Vic 20
The Author:	Hank Librach
The Publisher:	Prentice-Hall International
Price:	£8.95
The Reviewer:	Kevin Bergin
The Conclusion:	Sadly lacking in depth and much too late

Blast off with Basic Games for your Vic 20

A games book for the Vic with 25 playable games. Ah yes you say, but what about the errors in the book as with other games listings? Yes I did find some errors, but nothing serious enough to put me off. The problem seemed to be that the programs had been typeset, although the introduction claims they were produced directly from a daisywheel printer. All the Vic's symbols have been replaced with abbreviations and each game comes with an explanation of the program.

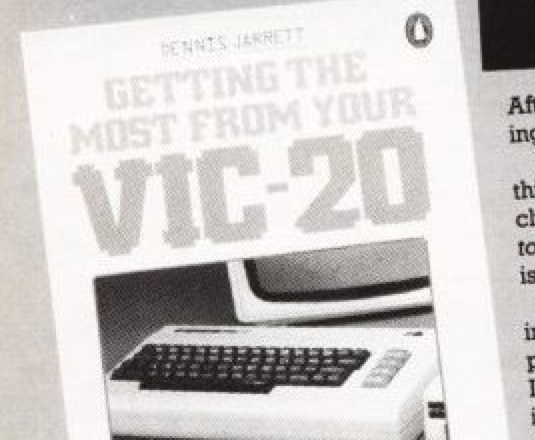
There are nine arcade games, some of them have a joystick option. One draw routine that uses a joystick, a decipher game, a piano keyboard tutor and a clever game called *Mixup*, is just as sample of the delights included.

There is a flowchart for each game which is very useful and is a nice touch especially if you decide to adapt the program or you just want to find out exactly what's going on. There are a couple of games that require expansion, but any expansion will do. All games that are not for the 3.5K Vic or those that use a joystick are clearly marked. The range of programs covers most types of games.

The book is an American import and this is reflected in the price. Despite that, this book is worth a look if you really are interested in games and eventually want to write your own. All of the programs work (eventually) and are easy enough to enter and follow.

The Book:	Blast off with Basic Games for your Vic 20
The Author:	David D Busch
The Publisher:	Prentice-Hall International
Price:	£12.55
The Reviewer:	Kevin Bergin
The Conclusion:	A better than average games book and a good selection of material. Worth investing in a copy

Getting the most from your Vic 20

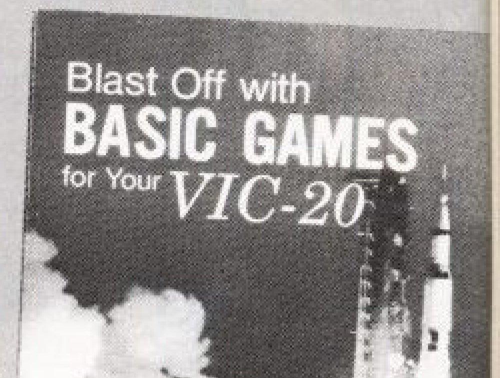


After reviewing many books supposedly aimed at Vic-20 users, it is refreshing to find one which does exactly as its title suggests.

Getting the most from your Vic-20 though written by the former Editor of this magazine, is not just a collection of his thoughts and ideas but also includes helpful hints given by Vic-20 users in general (including contributors to **Vic Computing** and **Commodore User**). For that reason alone this book is a must and certainly worth a place on all Vic users' bookshelves.

Many topics are covered, all of which should satisfy even the most demanding users – I particularly liked the chapters on the Super Expander, the Vic's printers, floppy disks on the Vic, and 'How to create your own Characters'. In this sense, *Getting the most from your Vic* is like having several manuals in one: and at £5.95 represents excellent value for money. If you want to understand what your Vic is really capable of doing, this is certainly the book for you: crammed with useful tips, a goldmine of information. In my opinion it is the best book to be written on the Vic-20 to date.

The Book:	Getting the most from your Vic 20
The Author:	Dennis Jarrett
The Publisher:	Penguin
Price:	£5.95
The Reviewer:	Clive Bulmar
The Conclusion:	very informative, very good value



the Vic-20

Mastering the Vic 20

The book starts with a good introduction which explains the format of the listings and text, it also thoughtfully tells you to skip the first chapter if you're not a novice.

Predictably, the book begins with a chapter on setting up the Vic. This is certainly useful to newcomers, but such information is by now widely published. Never mind let's press on.

By chapter two we are into programming styles and techniques, and then Basic commands and statements. This chapter is well presented and covers every Basic statement in great detail. Chapter four is entitled 'Entertaining with Basic', but the purpose of the chapter is most unclear. Anyway, it contains a few simple Basic programs and detailed explanation of how they work. The next two chapters are much the same but cover education and home use. The only really useful program is a bar chart program which at least gives the insight into how these charts are created.

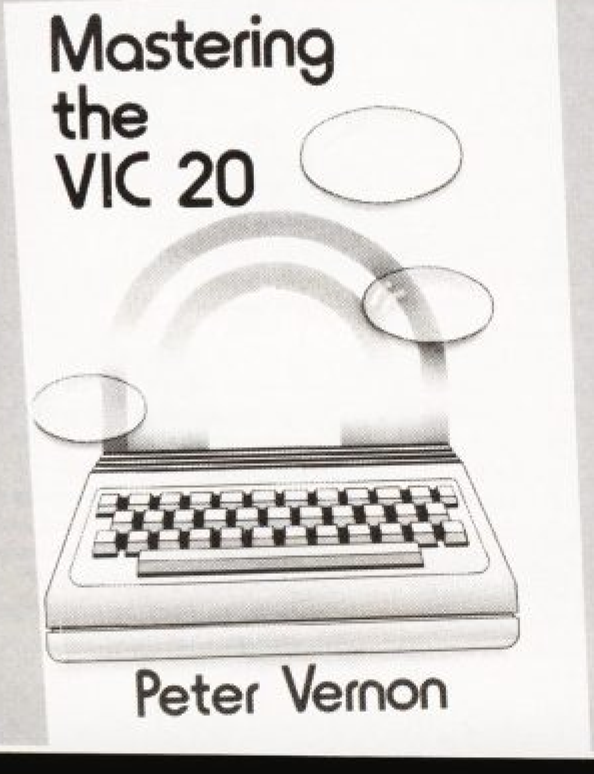
There's a simple section on graphics; creating and using them from the very simple PRINTing command to user-defined graphics and Hi-res – not enough of the latter two subjects, though. A chapter on Music does include a piano keyboard program and a few reasonable sound effects.

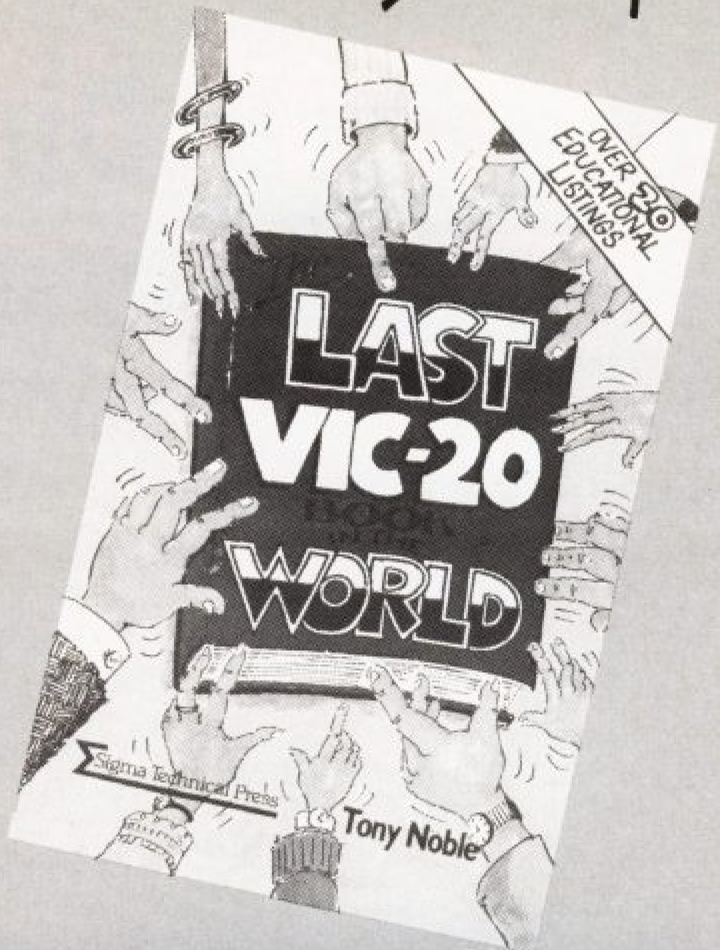
Chapter nine takes us into machine code (at last). Here we have a reasonable explanation of binary which deals with calculations in binary and hexadecimal. That's about it for machine code except for a couple of poor examples of plotting (positioning the cursor) and a few of the system routine entry points.

Chapter ten has literally a few words to say on printers, drives, cartridges, joysticks and memory expansion. There is also a very scanty set of Appendices bringing up the rear.

It is difficult to know what to say about such a book. The first few chapters were reasonable and did manage to whet the appetite, but the remainder is very disappointing and considering the price, is not very informative or instructive.

The Book:	Mastering the Vic 20
The Author:	Peter Vernon
The Publisher:	Prentice-Hall International
Price:	£11.65
The Reviewer:	Kevin Bergin
The Conclusion:	Not worth a place on my shelf. Maybe of some use to beginners, but there are better books available





The last Vic 20 book in the World

A collection of 28 programs that purport to be of interest to all ages. That could well be, as the topic area certainly covers pre-school children as well as parents. However, granny may have some trouble getting her teeth into this one.

The book includes an essential symbol list since the program have been listed on a Commodore printer. There is also a note on troubleshooting, in other words the most likely errors that you might make when entering the programs.

The content includes a few games; such as *Galactic Adventure* a strategy game for the unexpanded Vic. *Zoo Quest* and *Indian Ian* are the only two that require expansion. In *Zoo Quest* the player must hunt and capture animals whilst avoiding the keeper. *Ten Green Bottles*, introduces algebra to the accompaniment of the tune of the same name. There's also a game to improve your vocabulary, called *Word Find*.

Many of the programs are based around addition, subtraction and division, designed for younger children with adult supervision of progress. Indian Ian is worth a mention, it is designed to help young children distinguish between different sounds in pronunciation. It seems to work fairly well although it was not tested using a young child, but instead a very old one, namely yours truly.

All the programs have an educational element and would be very welcome around the home although perhaps not so welcomed by teachers in the school. A good buy for your child if you happen to have a Vic lying around somewhere. The only criticism is the title and hopefully this will not be the last book in the world for the Vic.

The Book:	The last Vic 20 book in the World
The Author:	Tony Noble
The Publisher:	Sigma Technical Press
Price:	£5.95
The Reviewer:	Kevin Bergin
The Conclusion:	A very well written and entertaining book

The Forth Dimension:

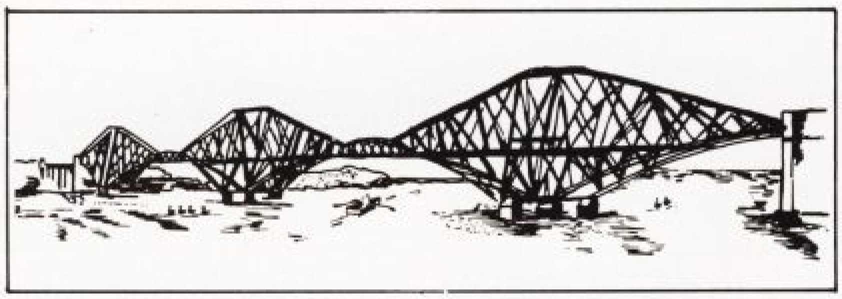
Programming with a DIY Language

Part three – the Stack

by Richard G Hunt

The word (DUMP) which I defined last time is a rough and ready example of how to obtain a desired result without knowing too much about the techniques. It works after a fashion, provided the dumps are not too large – in which case it tends to go bananas.

To tell the truth I have not actually discovered the reason for this but I guess it has to do with the stack...



Use of the stack is paramount in Forth, and words that relate to it are important. There are words that affect the number of items on the stack, like (.), (U.), (DROP), (DUP). And there are words that change the order of items on the stack, like (SWAP), (OVER), (ROT).

The functions of these words are simple and reference to your system manual should provide a stack diagram to show the effect on the stack. We have seen all of these in use in the word (DUMP).

Obviously operations may be performed only on the top of the stack, and it is necessary to make sure that the required value is there. These words handle pretty well – any stack ordering problems, especially as a basic tenet is 'keep things simple and don't put too much on the stack that cannot be easily handled'.

Clearly though, there may be occasional need for words that operate at greater stack depth. These words must usually be defined by the user; moreover, their definition illustrates further stack manipulation.

(PICK) requires a value *n* on the stack as a parameter and then copies the *n*th item to TOS. Its definition is straightforward referencing (SP@) which is a word that pops the value of the stack pointer to TOS.

```
: PICK 2 * sp@ + @ ;
```

(ROLL) is similar, but it removes the value from the *n*th position and puts it at TOS. In passing it should be made clear that the stack holds each value as a 16-bit number – two bytes per number. This is why (PICK)'s parameter value is multiplied by 2. (ROLL) serves to introduce both variables and the return stack. (Oh no, not another stack!)

```
0 variable stackindex
0 variable retindex
: ROLL dup dup stackindex !
retindex !
pick
begin -1 stackindex +! >r
stackindex c@ 0 = until
drop
begin -1 retindex +! r>
retindex c@ 0 = until ;
```

These two words work also, although I have seen an alternative definition of (PICK). If I now spend a little time on variables things may become clearer.

Forth supports both variables and constants, though they are used much less often than in Basic – mainly when the stack itself is unsatisfactory for the purpose in hand. This is clearly the case when trying to access a value not in the first three items. It is necessary to declare both variables and constants before use:

```
>0 variable green-bottles<
>31416 constant pi<
```

The word (VARIABLE) is itself a defining word, just as (:) is. How it differs is not relevant at this point – it is enough to know that by using this word in this fashion variable numbers may be accessed and indeed varied. For example:

```
>10 green-bottles ! green-
bottles @ .< 10 OK
```

The words (!) (store), (+!) (plus store) and (@) (fetch) enable values to be entered incremented decremented and read. Another example:

```
> -1 green-bottles +! green-
bottles @.< 9 OK
```

I should think the actions are evident.

The return stack is similar to the stack we have used so far. It is used normally by the system to keep track of parameters in use, as for example in loops. We have already mentioned the word (I) in a previous article; it fetches the loop index to the data stack – actually it copies the top of the return stack to the data stack. Its action is identical to (R>) (from R). (To R) (<R) pushes the top of the data stack to the return stack.

So in (ROLL) we are using two variables to hold the parameter which is the depth of the item to be accessed. The actual stack items are pushed to the return stack (in reverse order) until the required depth is reached. The value is then (DROP)ped, and the return stack is cleared by a similar procedure. Clearing the return stack is essential every time it is used in this way – otherwise the system will hang up on you in no uncertain manner! I'll explain the (BEGIN) structure next time.

A brief look at constants. Like (VARIABLE), (CONSTANT) is a defining word ... but its behaviour is slightly different. Values may be assigned in the same way. Use of the value may be demonstrated by evaluating the circumference of a circle with radius (r) employing the constant (pi) defined above:

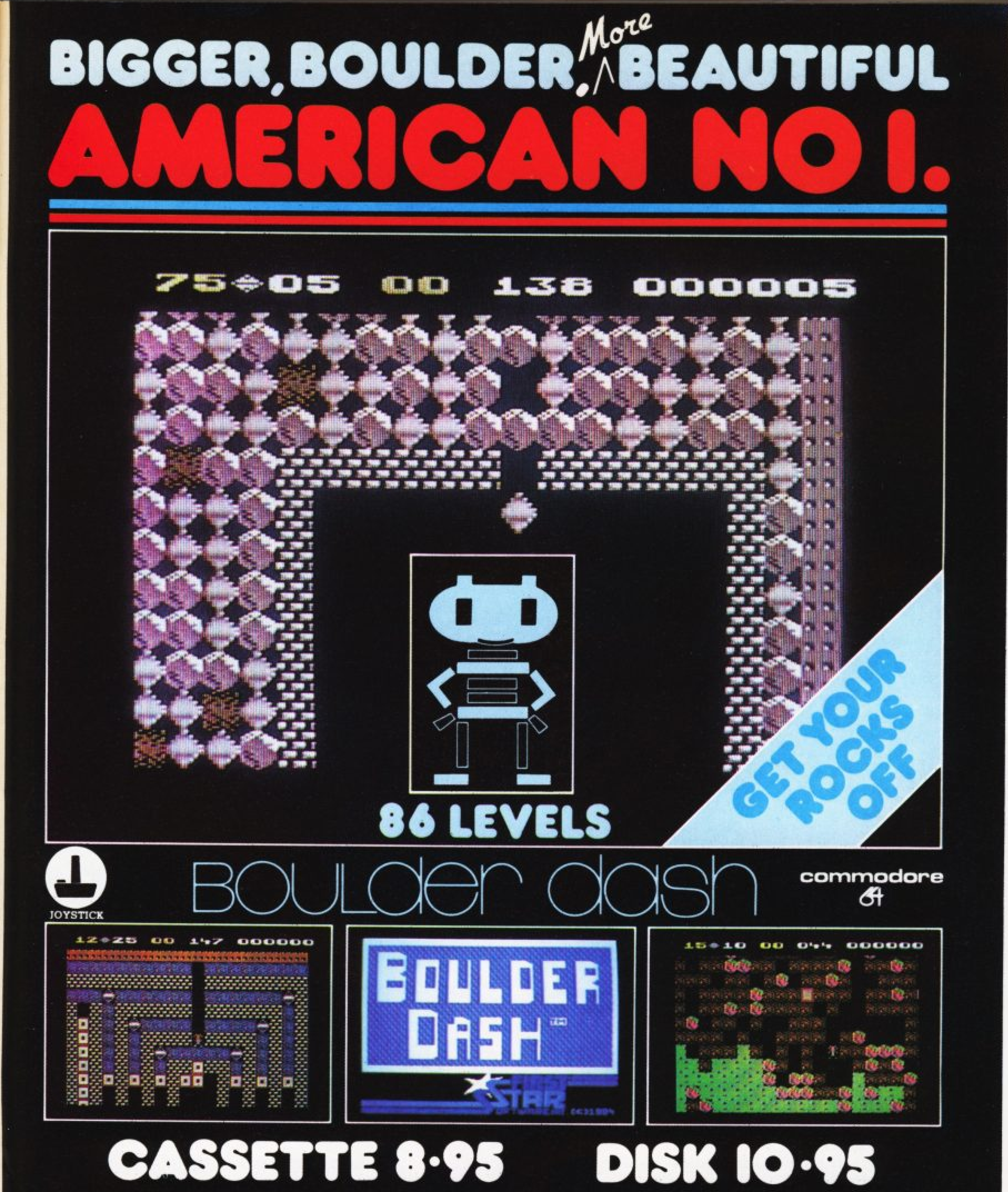
```
: RADIUS ."gives a
circumference of"
pi * 2 * 10000 /mod . ." ." . ; (n –
—)
```

(pi) pops the value of the constant on to the stack so that the expression may be evaluated by the operators (*) and (2*). (RADIUS) has been defined so that the conversation looks something like English.

Incidentally there was no need here for floating point arithmetic; and, for the precisionists, I do know that this value of pi is relatively imprecise. Refer to Brodie's *Starting Forth* for a pretty good integer approximation of pi.

The only remaining question is why bother to have two very similar functions in Forth. Obviously a frequent constant value is more conveniently accessed by name. Its value (by definition) is relatively unchanging.

With a variable, however, it is the *location* of the value that is more important as the system needs to operate on *the value at that location*. These are apparently small differences: but they allow for efficient handling, and are vital to understanding the more advanced techniques of defining your own defining words. This pleasure is to come in a later article.


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An introduction to managing information on Commodore machines

by Karl Dallas

You're writing to old friends and you can't remember their addresses; or you're the secretary of a club and you need to write to members who still haven't paid their dues. What do you do? You look them up in your records, of course. Similarly in business; you'll probably need to search through a stack of record cards to get at the information you require.

In all those cases, a database could make life easier for you. Karl Dallas introduces the concept of information storage and management on computers and gives a few personal recommendations of packages specially designed for Commodore machines.

Most people solve their name-and-address problem by keeping an address book. If there are a lot, you could keep them on index cards, adding information like birthdays, children and so on.

In a business, you could tag each record card with a little signal: red tag means account unpaid, blue means dormant account, yellow means very good customer worthy of special treatment, and so on.

And then, suppose you want to circularise all your male customers in Surrey who drive cars of over 2000cc and who holiday out of season, recording the responses as they come in, and then sending a follow-up letter to those who replied positively, plus a reminder to those who didn't reply at all? You could find yourself spending more time up-dating the cards than handling the business they're supposed to help you with.

These aren't new problems, but they're the sort of problem computers might have been invented to solve. They all have to do with information management.

The electronic card index box is generally known as a database. Properly, the term database applies to a central bank of information into which a number of people can dip at will. A single-user store of information should more properly be called an Information Storage and Retrieval System, but database is snappier, so we'll avoid purism and refer to individual systems as databases.

It's a sort of electronic card index; and this is so true that one of the best-known versions (not for Commodore kit, unfortunately) is actually known as *Cardbox*. You can use it to index anything, from membership or any other mailing list to the contents of a record library.

Sorting out your information

But how are you going to index them? Are you putting them in the box in alphabetical order of surname? Makes sense. But then, your business is expanding, and you've taken on a couple of representatives, one for customers north of the Wash, one for those in the South. Easy: subdivide the cards, keeping them in alphabetical order within the two divisions. Yes, but you must have a master file at head office. Then copies will have to be made. And when you get a new Midlands rep, you'll want to write to those customers, telling them that instead of Mr Bloggs or Ms Scroggs, your new Mrs Cloggs will be calling on them in future.

But you'll need to check throughout the entire file sometimes, because you're paying a bonus on the basis of total new business done, plus a special reward for your smartest salesperson who generated the most business for you.

You could keep another set of records, recording sales, and then another set for those who only deal with the nuts and bolts division, and not with the odds and sods division.

The problem, you see, is that a card is two-dimensional. For each new way of organising your information you need another box of cards – or you need to shuffle them into a new kind of order: geographical, size of business, representative's territory, credit rating, amount owing, type of products required.

To most of us, three dimensions is as many as we can handle. But a computer regards a dimension as just another mathematical characteristic, so that if you're programming, you can get quite used to dimensioning arrays 255 different ways. So this is where an electronic database scores over the box-and-card variety we all know so well.

Keys and Fields

Each of these ways of indexing the *Record* cards is based on what is called a *Key*. Your card index had an alphabetical key. Many database programs give you the option of several keys: sometimes a primary key (alphabetical, perhaps) plus several secondary keys (geographical, type of business, turnover, etc).

Others allow you to redefine any of the *Fields* of the record (surname, town, category) as a key whenever you want to.

Interestingly, very few programs actually sort the material into different order each time you redefine a key. Usually, some sort of index of each key is kept as a separate data file on disk or tape, and switching keys really means switching indices. So, you see, the computer isn't really any smarter than you, it still has to keep a different 'box' for each different way of ordering the lists.

Looking around

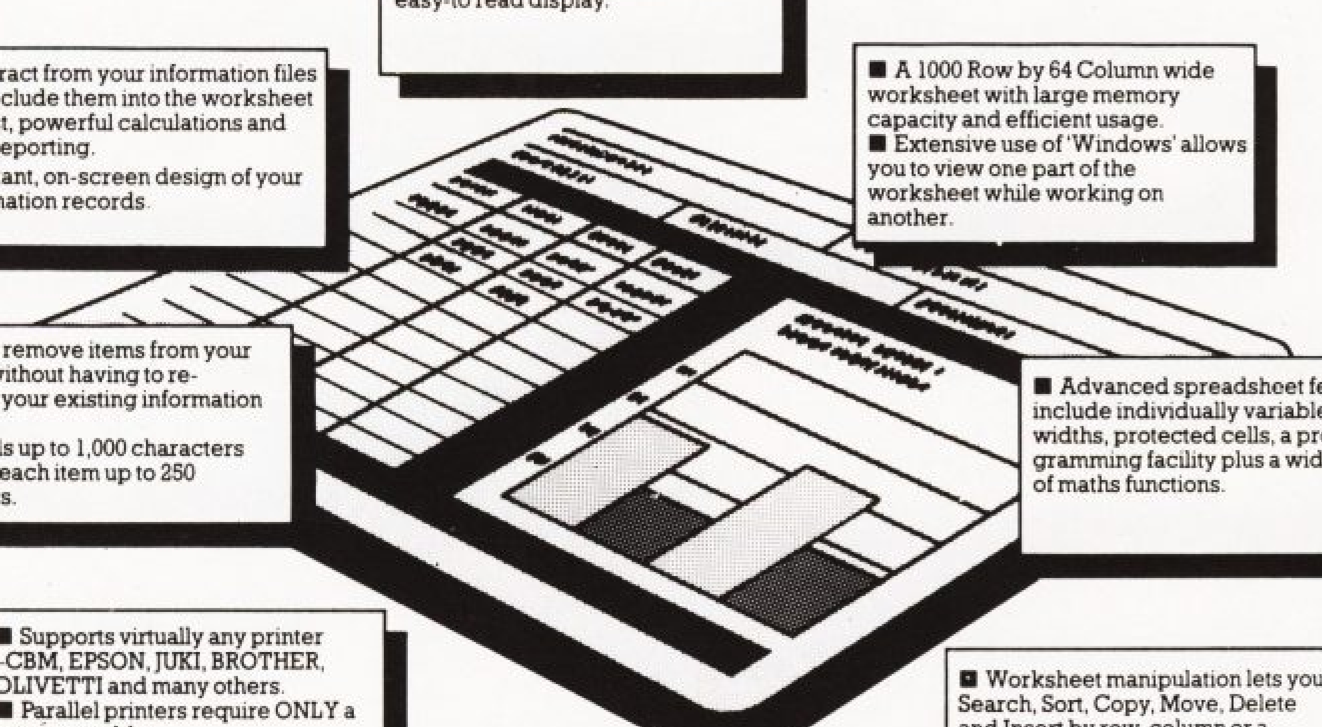
When you are looking at a database program, the most obvious guides to how powerful it is are:

- how many key fields can you have?
- how many fields to a record?
- maximum length of a field?
- maximum length of a record?
- how many files to a disk?

This last will usually depend upon your disk size. For instance, in Commodore equipment you'll get more data on the double-sided 8250 twin-disk drive (1,066,496 bytes, or roughly, a million characters each disk) which goes with the 8000 series of business machines. On the single 1541 disk that goes with the Vic or 64 home machines you'll get 176 thousand bytes). So if you have a limit of 500 characters per record, you'll get six times as many of them on the disk with the bigger capacity.

If the program can handle its data across twin disk drives, and can instruct you when to change the disks, theoretically its size should be unlimited. One program claims a data file limit of 65,535 records of 254 bytes each. That adds up to a mighty 16 megabytes of data. And it runs on a Commodore 64, which only has 38,911 bytes of memory available to the user – pretty good going.

Another thing you'll need to know is how versatile the program is. Can you arrange records any way you like (within the limitations of the equipment), or has it all been predetermined?





Is is easy, is it versatile?

The more versatile program may be much harder to operate. For instance, some databases, like Superbase, virtually amount to a programming language in their own right; though in that case a number of commands familiar to Basic programmers (plus some special ones) make it easier than it sounds.

In such a case, a *Menu-Driven* program, in which the user just responds to screen prompts, and doesn't have to know anything about the way the program actually works, is easiest to handle.

If you're a programmer, you may want to know how easy it is to modify the program to your own purposes. For instance, *Simply File* is written in Basic, so as long as you can understand what is going on inside the fairly densely-packed code, you'll be able to change it. Machine code is only a little less accessible, if you know what you're doing, but some of the best programs are carefully protected to stop you getting into them and finding out how they work. Some won't even allow you to make safety back-up copies in case someone exposes your system disk accidentally to a magnetic field, which is recommended computer practice.

Fast access to information

You'll also want to know how fast the program works. Most of the time, a computer is so fast, compared with the human brain, that the differences in speed between one program and another are fairly academic, because the real limiting factor is the human element. But when they're manipulating great lists of data, differences in speed can become very critical, especially where some mechanical element comes into play, like a diskette or (especially) a cassette drive.

A cassette-based database that doesn't actually hold all the data in memory at a time, and manipulate it there, is virtually useless. That's because the chore of winding tapes on to the appropriate point, then biting your fingernails while it reads the data, then reSAVEing it after it's been modified in some way, is more than human impatience can stand.

Even using disks, access time can take as long as boiling a kettle, and that's why hard disks were born. You'll also want to know whether the data on your record files can be accessed by other programs: a mailing list/ address list could be used for a *mail-merge*, with personally addressed circulars produced by a word processing program, for instance. Or financial information could be transferred to a spreadsheet.

Some software publishers have deliberately made it possible for their various programs to interact in this way: **Precision** market the word processor *Superscript* (and they wrote *Easy Script*, a slightly simplified version marketed by Commodore) and they also sell *Superbase*, and the two can interchange data. In fact, users of the 8296 'business Pet' can get *Superoffice*, an integrated package which allows the user to jump between Superbase and Superscript with a couple of key-strokes, and without losing the work that's been done in each half, either.

If the program doesn't tell you, find out how the data is stored. If it's as ASCII text files, then they are available to any other program that can handle ASCII files.

Among the numerous programs currently available, here's a short list (in order of price) of products eminently worth looking at:

On tape

Infotape 64 – Commodore 64
Beaver Software, £16.95

File size depending on record length: 750 records of name and three lines of address: fields-per-record times number-of-records must not exceed 3000, report generator with five printing formats, 19 calculator functions, search function includes INS (equivalent of INSTR$). Record format compatible with Infodisk, so can be upgraded.

On disk

Data Manager – Commodore 64
Softalk, £25.95

A fairly unsophisticated database (maximum 8 fields per record) but with some nice add-ons, including the ability to analyse the stored data using sum, average, standard deviation and frequency charts. About 630 8-line records can be stored on disk. The cassette version does all its manipulation within memory, and can handle about 60 records at a time.

DFM – Vic/64
Dialog, £30.00

Works within memory at the moment, which makes it fairly fast, but there's a new version in the pipeline that will use random access disk files, so make sure you know which one you're getting. Basic, but effective. Includes mailing lables module (or £24 without).

Magpie – Commodore 64
Audiogenic, £39.95 (disk), £99.95 (cartridge)

Maximum record-size 3050 characters with 52 fields – 26 alpha and 26 numeric – plus calculator screen, menu-driven 'procedure' (program) editing, and help screens on disk. Very good manual, though the help screens almost make it superflous.

Simply File – Commodore 64/ 8000 series
Simple Software, £69/£74.75

Written mainly in Basic, so details of display, number of fields etc (set to 20) can easily be redefined. The Central Electricity Generating Board is using this program with 63 fields! Any field can be made a key for search, sort etc. Each field entry is limited to 79 characters. The number of records is limited by disk space and the number of key fields specified – typically about 800 medium-sized records on a 1541 disk, between 1600-2000 on an 8050.

Infodisk – Commodore 64
Beaver, £74.95
Variable-length records, maximum record-size 2400 characters with 180 fields, maximum field-size 80 characters, nine screen pages per record, with very sophisticated calculator functions.

Figaro – Commodore 64
Saxon, £86.25

Unique numeric database with powerful graphics function, but rather impenetrable manual, though working through the printed examples helps. This is much improved over the



Spectrum version – but then that was a sixth of the price.

Vizastar – Commodore 64
Viza Software, £99.95

Describes itself as an information processor, which for once is no mere hype, since it combines database, spreadsheet and graphics in a manner that makes the Commodore Plus/4 look rather ill. Number of records in a file limited only by disk size (about 1200 names and addresses on 1541, about 8000 on 8250), up to 64 fields/9000 characters per record, 9 screens. The real plus is it *is fast*, with an average access time of less than three seconds. Soon to be made available for the 8296 and the Plus/4 machines. By then, perhaps they'll have rewritten the awful manual.

Superbase 64 – Commodore 64
Precision, £100

Maximum record-size 1108 characters with 127 fields, maximum field-length 255 characters, four screens per record, help screen editing capability, plus very powerful programming language, with 50 extra commands plus 21 Basic commands, Probably the best value for money database program on any micro. Version also available for the CBM 700 and (shortly) the new Commodore PC IBM-compatible.

Master 64 – Commodore 64
Calco, £115

Not so much a database as a really powerful programmer's aid with all the usual AUTO, DELETE and FIND commands, plus more that aren't so usual: screen creation and storage on disk, and the database part, allowing a record-size of 254 bytes, maximum number of fields 254, up to ten files open at the same time, and data packing which compacts field entries by a factor of eight-into-five bytes (ASCII) or 12-into-five (numeric floating point).

Superoffice – CBM 8296
Precision, £799,25

A combination of Superbase and the excellent Superscript II word processor, with optional use of Superspell spelling checker instead of Superbase. Actually, this version of Superscript is not so powerful as the stand-alone module, but the combination is very useful. ●

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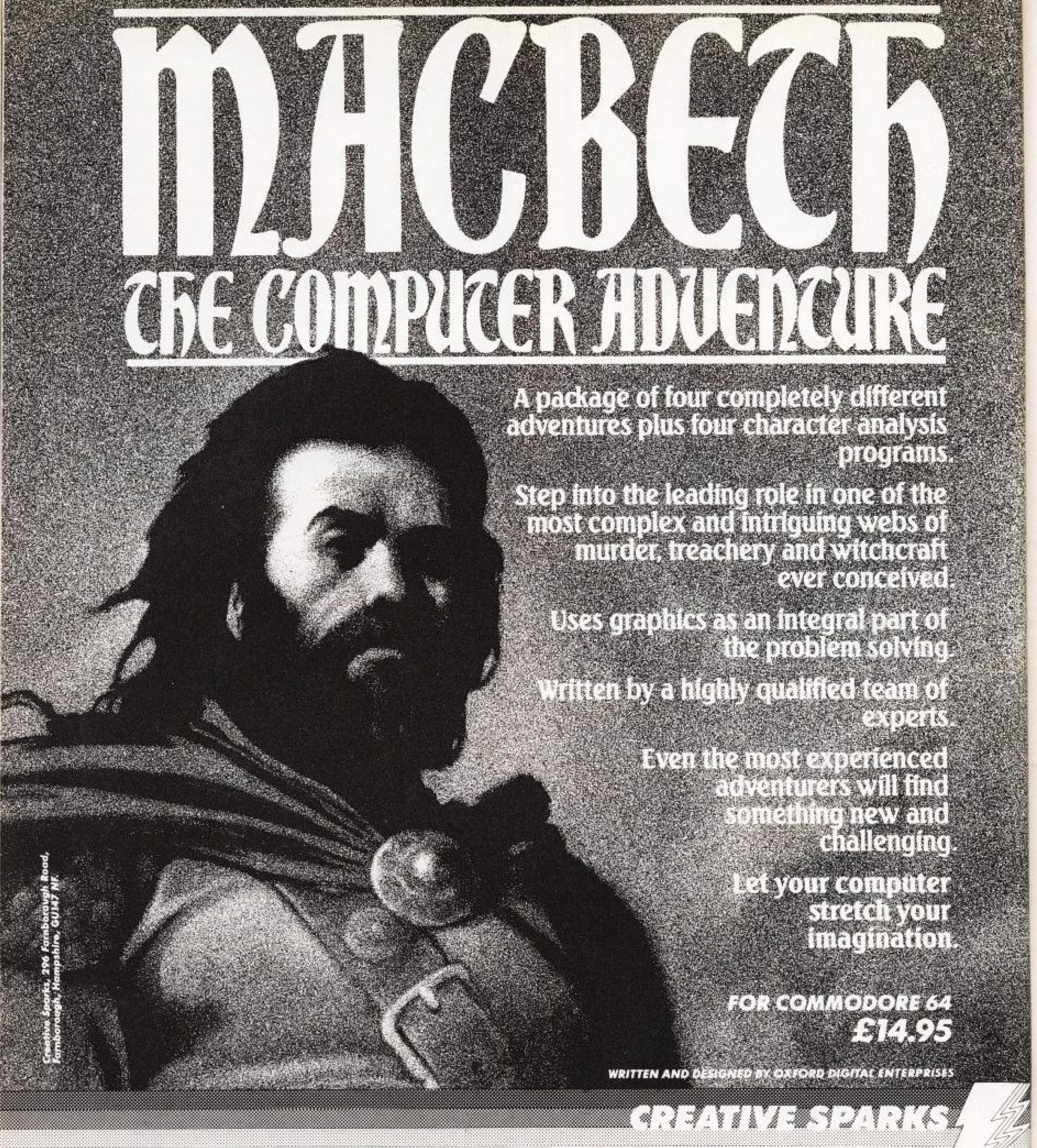
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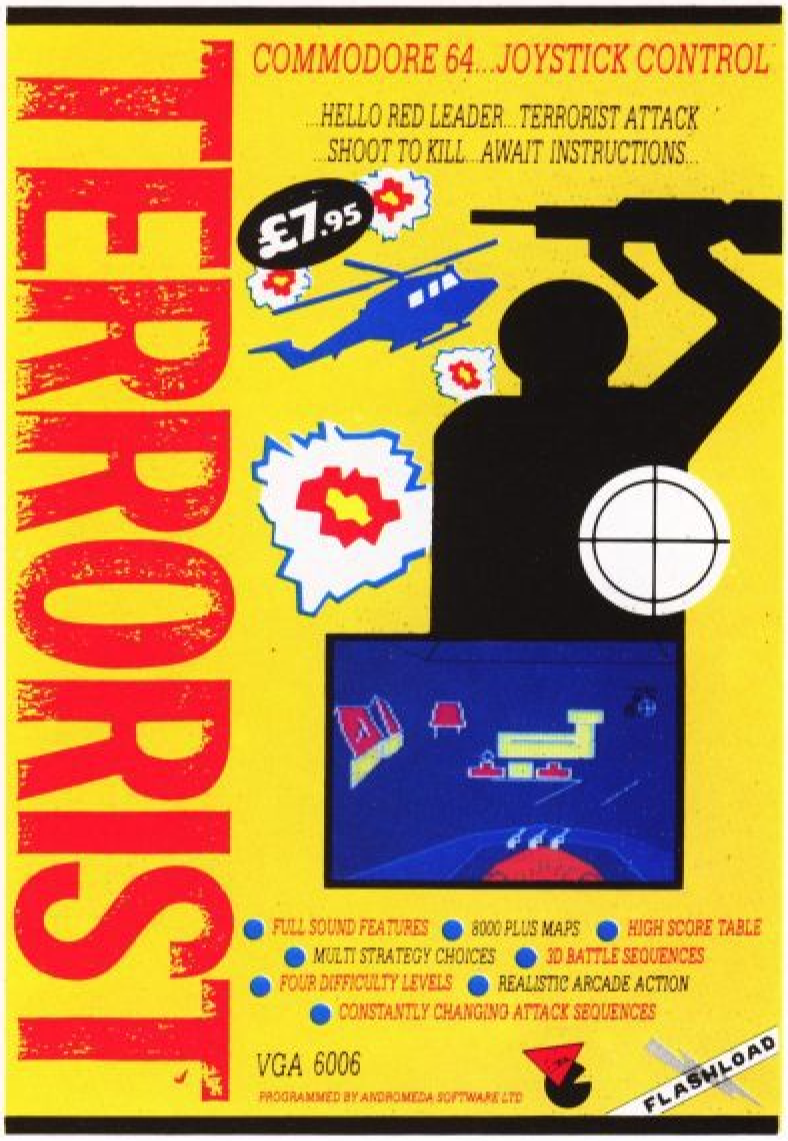
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Tommy is Commodore User's resident know-all. Each month he burrows through a mountain of readers' mail and emerges with a handful of choice queries. The result, before you, is a wadge of priceless information and indispensable advice. There's even the odd useful tip as well.



Dear Tommy, I have owned a Vic-20 for nearly a year and have been confused about this line:-

PRINT (X AND 7)

I know that it returns a number when X is a variable, but that's all. Please explain how it operates as none of my friends know.

The Boolean operators 'AND' and 'OR' can be rather confusing unless you understand the basic principles (known as Boolean algebra!). The rules can be summarised in what are known as Truth Tables.

A	B	A+B
0	0	0
1	0	0
0	1	0
1	1	1

Figure 1

A	B	A+B
0	0	0
1	0	1
0	1	1
1	1	1

Figure 2

In other words, the result of A 'AND' B is only 1 if *both* A and B are themselves 1 (fig. 1). With an 'OR' operator, A 'OR' B equals 1 if *either* A or B are 1 (fig. 2).

When you see an expression (X AND 7), you have to consider the binary values which make up the numbers. Thus if X = 12 we get:

12 = 00001100
7 = 00000111

Only one of the 'bits' has a 1 in both numbers so the result of (12 and 7) = 00000100 which is 4.

***Dear Tommy,* I have a Vic-20 which I purchased as a starter kit last October and it has worked perfectly until recently.**

If I write a program and SAVE it, switch off, return later and LOAD, it works perfectly. But trying to load the tapes that came with the starter set, or any other programs I SAVEd when first learning, nothing happens. I have attempted these on a neighbour's equipment and nothing happens. Although a program SAVEd today will LOAD on his and one from his will LOAD on mine. We both have identical equipment. I have tried original tapes and my earlier tapes on my son's Vic-20, identical to ours, and they all work perfectly. But my present-day SAVEd tapes do not LOAD on my son's Vic.

Any suggestions would be appreciated.

Your problem sounds like one of tape speed. If you and your neighbour have had your equipment about the same length of time it is possible that both recorders require adjusting or servicing. Tapes recorded at the current speed will reload happily, but previous tapes recorded at the *correct* speed will not. Likewise your new tapes will not load on your son's machine because his recorder will be running at a different speed to yours. The fault could be either mechanical wear and tear or a faulty component in the speed control circuit. Either way I suggest you need to gets your recorders serviced.

***Dear Tommy,* I am at my wit's end. I just don't know what to do. So could you please advise me and don't brush this letter aside and throw it away.**

I am just finishing my 'O' levels and have become interested in computers. Finding the right computer was then a problem: a Spectrum, an Electron or a 64?

Finally I went for the 64, sent off to my investment account for the money, then I read in the June Commodore User that the new Plus 4 is due for release in September.

Should I wait and pay the extra £50 or so, will it be worth my while? Or will I find it more of a business computer and no software for the home (either games/educational/home accounts – for the old man!)?

Please, please, please could you advise me as a non-biased view. I would very much appreciate it.

"A bird in the hand is worth two in the bush" may be an old proverb, but never has it been more appropriate than in the world of computers. When the 64 was first launched there were many delays. Limited supplies and not a great deal of software; now the 64 is much cheaper, in plentiful supply with a vast range of software for almost any type of application. There is no reason to think that the new Plus/4 is going to be any different in its birth pangs.

There will always be a better machine over the horizon; the Plus/4 has a better Basic, built-in software packages, etc, etc, but apart from the pre-release models at the Commodore Show, I haven't seen one either fully reviewed or available to buy. My personal opinion is to buy what you can afford that is available *now*. You can always upgrade to the Plus/4 next year or later when it has been de-bugged, up-rated and all its promised peripherals are actually available.

By the way, you'll find a preview of the Plus/4 in the last issue, which majors on the machine's Basic and graphics facilities. That may give you a little more to base your decision on. This issue, of course, we've looked at its in-built software.

***Dear Tommy,* Can you tell me why when I plug in the Commodore International Football cartridge my tape unit starts, and why unless the 1541 is physically disconnected there is no sound?**

Additionally I would like to join the growing band of unhappy Commodore users. I recently bought a 1520 printer/plotter to find it is configured as device number 6, most software assumes device number 4. Questioning Commodore they said it was to allow two printers to be configured; but it is not possible to daisy chain from the serial port.

There appears to be a bug in the International Soccer cartridge. Bit 5 of address 0001 controls the motor; address 0001 also controls the switching of the Basic ROM and the Kernal ROM and when these are switched out I imagine the programmer has forgotten to leave Bit 5 set to 1 which is the motor off state. Not a lot you can do I'm afraid other than unplug the tape.

I am surprised however that you lose sound with the 1541 plugged in; I have used the cartridge myself with a 1541 attached without any problem on the sound at all. I suggest you get your dealer to have a look at your 64 or try a new cartridge.

Setting up the 1520 as device 6 has caused a lot of dissapointment amongst Users; however, by making you own splitter box it *is* perfectly possible to run both a standard (device 4) printer and the 1520 off the serial bus. You can adjust the device number of the 1520 by cutting a track on the PCB, but I do not have the full details and it would invalidate your warranty to do it.

Dear Tommy, Please could you explain the term 'pass' as in 'two pass assembler'. I have assumed it meant the code was in two forms before it was actually input into memory.

The term 'pass' refers to the number of times the assembler runs through the program to produce the final code. The reason it needs to go through the code more than once is that not all the information it requires is available to it the first time through. For example, it may detect jumps to code/labels it has not yet reached; these 'jump addresses' cannot therefore be calculated so it normally stores the label etc in a 'table'.

When it finds the subsequent address it stores that in the table as well. The second time through the code it can insert the correct jump addresses from the table. Some assemblers/compilers can require up to four passes, doing different processing each time through. It is possible to get single pass assemblers, but they tend to be more complicated and more expensive.

Dear Tommy, I would like to get an electronic typewriter which can double as a printer for my Commodore 64. Could you please tell me which machine(s) is best for this purpose? Thanking you in anticipation of your help.

It is always slightly difficult recommending equipment without knowing exactly what it is going to be used for. After taking advice from someone who sells both computers and electric typewriters I would suggest the **Smith Corona EC1100** together with the appropriate Centronics parallel interface as a general purpose machine. I have seen and used this combination and it is the best typewriter/printer system I have come across at the price. Unfortunately, like the majority of these computer/typewriter combinations, the interface is not 100% robust and will occasionally crash if you try to be too clever with it.

For normal WP and listings however it seems perfectly adequate and as an electronic typewriter it is superb. It costs around £450 including the interface; your dealer may well be willing to fit the interface into the typewriter for you if you ask, since it does involve cutting the case. One point to note is that you will still need a software or hardware 'CBM to Centronics' interface and a suitable cable in order to connect the printer to the CBM 64. This will add between £20 and £60 to the total price.

Dear Tommy, As I have not had a computer for very long, I hope you can inform me of a program that will change the screen from 22 to 40 characters on my Vic-20.

I have a cassette whose programs require a 40 character screen or more. I find your magazine very good and interesting.

I am not aware of any way of changing the Vic's screen using software. What you need is a 40-column card which does the conversion externally. The main problems are the cost, plus the fact that you need a monitor to use with most cards. There is also the problem that commercial programs may not be able to use the 40-column screen unless they only use PRINT statements.

Since the screen is normally located at a different address when using the card, existing POKEs to the screen will no longer work and must be altered. *Zero Electronics* do a suitable 40/80 column card for the Vic-20 priced at £64, plus £70 for a monitor.

Dear Tommy, In Tommy's Tips of the May 1984 issue you referred to setting Switch 4 ON in the 8K RAM cartridge to fit this into the ROM area starting at 40960 (A000).

Will you please demonstrate by way of a short program how we insert DATA into this area – and more importantly – how the Basic program knows where it is?

Thanks for the best magazine around on Commodore.

As I said in the original answer, there is no easy way to access this

Tommy's Tips

area *directly* from Basic. You have to use the standard PEEK and POKE commands, but you can use a DEF FN command to set up the area as if it were a large array, eg:

```
100 DEF FNW(EL) =
      POKE40960 + EL,X
      (Function Write)
110 DEF FNR(EL) =
      PEEK40960 + EL)
      (Function Read)
.
.
.
2000 FOR EL + 1 TO 50
2010 READ X: FNW (EL)
2020 NEXT EL
```

This would store DATA values (numeric only) in the first 50 bytes of the 8K ROM area. Equally, the values could be input from a tape or disk file. To read the values back use: **X = FNR(EL).**

Dear Tommy, I have recently bought the Tripler 64 interface to interface my 64/1541 with a Shinwa CP80 printer – a cartridge that plugs into the expansion slot, with one serial and one ribbon cable.

My problem is that I bought the interface by post, and it came with no instructions, not even a box! The dealer isn't too keen to answer my letters, and I can't seem to get the system to work. Can you provide any advice on:

a How to connect up to the 1541/C64

b What responses to make to the 'printer' screen prompts when initialising Easy Script

Hope you can help.

The connection should be straightforward enough; the cartridge goes into the expansion port, the serial cable plugs into the second serial socket on the 1541 (the disk drive is connected to the 64 in the normal way) and the ribbon cable then plugs into the Centronics socket on the printer.

As for Easy Script, try telling it that you have a standard Commodore printer attached; you should at least get *some* output although you might not be able to use all the fancy fonts etc. You can try the printer directly by the following test program, which must be typed exactly as shown (ie in Upper/lower case):

```
100 for sr = 0 to 9
110 open 4,4,sr
120 print #4, sr; " TESTING test-
      ing"
130 close 4: next
140 end
```

This will test all the secondary addresses and tell you which ones give lower case, which ones suppress Line Feed etc. If you do not get any output from this at all then you have a problem and it's going to mean a fight with the supplier to get your money back.

Dear Tommy, Perhaps you have an answer to my two questions.

I have a Commodore 64, cassette deck and a 1520 printer/plotter. Is there any way I can print directly from the computer without having to constantly open and close a file?

At present in order to transfer what's written on the screen to the printer I must open a file, type in CMD 3 and on typing LIST, the printer will print. Also how can I transfer my printer from 40 digits to 80 digits wide?

Hope you can solve my two problems.

You are getting confused between 'files', which store data, and 'streams' which provide a data channel. When you **OPEN3,6** you are telling the computer to open data stream number 3, connected to device 6. There is no other way of telling the computer which device you are addressing. When you type **CMD3**, you are saying "instead of printing to device 0 (the screen) send all output to whatever I have connected to stream 3".

These 'streams' enable a number of devices to be connected at the same time, yet allows the User to select only the particular one he requires.

To get your 1520 to print in 80 column mode, type the following:

OPEN 3,6,3: PRINT #3.0

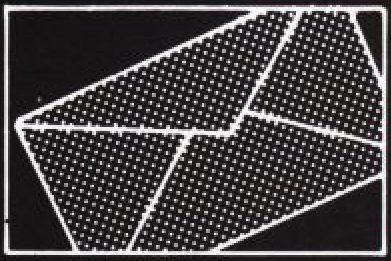
Full details are shown on page 30 of the 1520 User's Manual.

Dear Tommy, Could you please tell me if it is possible to access and use the 3K of memory between locations 1024 and 4096, without buying a 3K RAM pack?

I'm afraid that it is not possible to use something that isn't there. The problem is that the 3K expansion area does not actually exist until you plug in a 3K RAM cartridge; there is just a 'hole' in the memory map from 1024 to 4095. All the extra RAM of 8K or more goes in a different location in the memory map (8192 onwards) and cannot be altered. I regret that without a 3K RAM pack your game is doomed to gather dust.

Write away

This is your page: normally we write for you, but here we listen. Feel free to let us know what you think – about the magazine, about Commodore, about suppliers, about life, art, the meaning of existence or whatever. We don't print everything we receive, of course; but anything that might be of specific relevance or general interest will make it to these pages.



Case for lower-case

I have read with interest your article on user-friendly program design - Six Rules for Better Programs (October 1984). I too (by experimentation, not scientific tests) have found green text on a black background to be the most readable display combination on the Commodore 64. Your sixth rule, however, must be treated with care. The use of capital letters is, indeed, an excellent idea *except* in educational software designed for young (ie primary school) children.

I recently wrote some software for my old primary school, writing the instructions in upper case letters, only to find that the younger children were unable to read the text. As soon as this was changed to ordinary mixed upper and lower case, the children had no trouble in reading my instructions.

Andrew C R Martin, Christ Church, Oxford OX1 1DP.

Home-control parts

I was very interested in your article concerning the connection of the Vic to the "outside world" so to speak.

I noticed you used R.S. Components' parts in your construction and rightly stated that RS do not supply direct. Anyone interested could purchase the parts through me.

I would obviously make a little money in the process but anyone purchasing through me would get the parts at, most certainly, a lower price than a normal retailer, if in fact there was a retailer in their area.

M Worthington, MJ Electrical, 22 Mill Street, Mansfield, Notts.

Designs on Simon

In reply to T Waterhouse's letter in the September issue concerning the DESIGN command used by Simons' Basic for setting up sprites, the fault lies not with the command but with the manual (for a change!).

Using DESIGN 0,2048 will put sprite data at 2048. This is fine, except 2048 is where Basic programs start, so the sprite data overwrites the beginning of the program, meaning it will no longer list or run.

The answer is to put the sprite data elsewhere in memory. It must still be within the first 16K of memory, due to the way the video chip works. The best solution is to put the data at the top of the first 16K in locations 16320 onwards (using DESIGN 0,16320). To use this data for sprite zero you have to use MOB SET 0,255,X,X,X, which will get the data from the 255th block of 64 bytes, which starts at location 16320.

If you want more than one sprite, I suggest using blocks 254, 253, 252, etc. in descending order (using DESIGN X, 16256 for block 254, for example, since 254 x 64 = 16256). This will avoid overwriting your program, except possibly if it is longer than about 13K.

This information was gleaned from Commodore at Slough, who do have some people who know about their products (it's just that everyone else there tries to stop you getting to them!).

Michael Clarke, Lisburne House, 1a Lisburne Road, London NW3 2NS.

Disk tips

The "disappearing document" problem (letters, September), is indeed caused by a bug in the disk operating system ROM. What the bug actually does is this. When a save and replace is executed, the DOS sometimes frees disk blocks in the RAM that are actually in use by other files. This may cause a subsequent save (with or without replace) to use the freed block and hence corrupt the file. If the block happens to be the first block of a file, then the apparent effect is that the entire file has been replaced.

The solution to the problem is to immediately validate the disk after a save and replace. This will reconstruct the RAM from the directory addresses and the link addresses within each of the files. The only problem is that validate can take a long time to execute on a fairly full disk.

As for Mr McDonald's observation that a new file can cause problems, I can offer but one explanation, which is not connected with the above bug. It may happen that you fail to close a file after writing data to the disk. If you then scratch the file, you will clearly remove it again. But somehow this sets up a disk error of a nature I have been unable to identify, but could best be described as a time bomb. The disk will continue to function normally for a while, and then suddenly there is a problem.

Never remove an unclosed file with scratch (though it is quite easy to do without thinking). Validate the disk instead. (This will also remove any random files created with the advanced commands.) If you do accidentally scratch such a file, then transfer everything possible to another disk (not by copying as that will transfer the time bomb as well!) or stick a write protect tab on the disk and never remove it again.

Anybody who has tried to use Commodore's CHECK DISK program (supplied on the demo disk with the drive), and has bothered to wait the 3 hours or so for it to execute, may have discovered that at the end of it all, the program may well tell you that the disk is OK but leaves the RAM as showing that no blocks are free. The program contains two bugs. Here are two corrections; the first cuts the execution time down to around 10 minutes, the second leaves the RAM reflecting the true status of the disk.

Change line 150 to read:

```
150 IF EN=0 THEN 90
```

Add a new line:

```
213 PRINT#15,"V"D$
```

I G Shorrocks, 58 Kinder Close, Thamesmead, London SE28 8HG.

Bathurst blunder

What a great review by David Bolton of Milton Bathurst's, book Inside The 64 (Commodore User September 1984, page 53).

However, I would like to point out that we (Supersoft) are exclusive distributors of this book in the UK, not Sunshine Books. I am afraid that we must be responsible for the 'very expensive' price of £12.95 but on the other hand it was originally released at £15 and we only managed to get the price down with some hefty quantity orders.

By the way, although Milton Bathurst hails from the good old US of A, he lives in Belgium which is where the book is actually printed. Maybe the high price is due to EEC tariffs?

But seriously folks, this book isn't going to fall apart all over your living room. The binding of the original printing did leave very much to be desired, but subsequent printings have been securely bound so you won't have falling leaves, even if it is Autumn. Later copies can be identified by the lilac cover and the new name: What's Really Inside The Commodore 64.

Peter Calver, Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middx HA3 7SJ.

Praising the 1541

In most articles in your magazine referring to the 1541 disk drive I see it described as "plodding", "snailike" or "sluggish". OK, I admit it is relatively slow for a drive but compared to the cassette most 64 and Vic owners use it seems as fast as lightning.

Potential buyers of the 1541 could be put off - most writers make it seem almost as bad as the cassette whereas it is more than adequate for most users.

Generally though, your magazine is excellent - especially the reviews of business software.

L Graham, 6 Glenfield Crescent, Ruislip, Middx HA4 7PF.

CLASS

CBM64, C2N cassette 1525 printer, 1541 disk drive, Easyscript, Introduction to Basic, Stock Control, various games, all manuals and boxes as new, disks and paper, £575 ono. 0723-360926/0723 352379.

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Hi from Down Under in New Zealand! I want penpals from Canada and Britain with Commodore Vic-20s. Write: Russell Gander, 10B Brierley Place, New Plymouth, New Zealand.

I have a Vic-20 with over 130 programs. You can buy or change them, some programs are: Gridrunner, Amok, Dragon, Slalom, Vicfriend, Rat Race, Chess, Slot Machine, Poker, Roulette, Avenger, PacMan, etc. Silvio Polacco, 53 Molveno Street, 00135 Rome, Italy.

French Vic fan wants teenage penfriend (age 14) who's keen on computers, to come to my family for Christmas holidays. If interested write to: Jean-Christolphe Arnulfo, 50 rue de la soie, 68000 Colmar, France.

C16, CBM64 and Vic users! Bored with your software? If so, why not exchange it for those programs that you've always wanted? membership is free! You can have free exchanges! There is a listing service available, and lots of bargains. Send an sae for details to: Mavac Enterprises, 101a Underdale Road, Shrewsbury.

Vic-20, recorder, plus 3K, 13 cartridges, 6 books, 7 slot Afron expansion unit, joystick, 129 progs inc. Gridrunner, Amok, Scramble, Mower Mania plus many more plus mags, only £230 ono. Contact Belly, 36 Moor Top Drive, Hemsworth, West Yorks.

Vic, 64 software exchange. Got any unwanted games? Send them to us, and we will send you back the game you require. Send a stamped addresses envelope for details. 15 Meliden Way, Penkhull, Stoke-on-Trent, Staffs.

CBM64 software for sale: Radar Rat Race (ROM) £8.00; Revenge of the Mutant Camels, Attack of the Mutant Camels, Falcon Patrol, Hustler, Hunchback, Savage Pond, Moon Buggy, Bear Bower, £3.50; Squash a Frog, Centropods, 3D Tanx, Krypton, £1.50; all including P&P. 46 Cathay Street, Glasgow G22 7LU.

Attention all Vic-20 and CBM64 users. Whether you're a dealer, user group, individual or software library, do you really know what commercial software there is for the Vic and the CBM64? Well it's taken us ages to come up with the document, it covers games, utilities, education, books and busines software. It gives descriptions, hardware, price, independent ratings and suppliers with addresses etc. For delivery asap send cheque/PO for £5.00 UK or £6.00 overseas to Cementls Information, Box 015.

LOGO (Turtle Graphics) for Vic-20 plus Super Expander. Tape and full manual £7.00. Pay I.M. George, 3 Alexander Close, Hayes, Kent BR2 7LW.

Vic-20: Dutch boy wants to have an english penpal. Write to: Hessel Pypker, Smitsweg 20 gg82-HT, Uithuizer-meeden, Holland.

Vic-20/CBM64 Software Hire
No membership fee! Quality titles (eg Skyhawk, Jetpac, Flight 015) from 50p per week. Already 500 delighted members. Join them now. All games originals. Send 2 x 17p stamps for your Hirekit (please state which machine) to:
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Vic-20 Word Processor. Victext. Powerful word processor. Facilities include:- Large text buffer, auto centre text, variable tab, insert, amend, delete, copy, move text, word count, right justify, etc. Fully menu driven with comprehensive easy-to-use instructions. Needs +16K expansion min. Great value: cassette £6.95, disk £9.45.

Vic-20 Data File. Takes the place of any card index. Facilities include:- save, loadfile, full sort, print all/part records, amend, delete records, memory remaining, etc. Needs +8K expansion min. Cassette £4.50. Both programs can be used with all direct connect Vic printers inc 1520 printer plotter. Fast delivery by first class mail. Send cheque/PO to: A&C Software, 51 Ashtree Road, Tividale, W Midlands B69 2HD.

Poker, the classic gambling game. Offered to Vic-20 (16K RAM) owners for only £2.25, P&P free. From: Poker Software, PO Box 1, Chatteris, Cambs PE16 6JR.

Commodore 64K, 1541 disk drive and 1701 Commodore colour monitor for sale. 5 year parts/labour full warranty, only 7 months old. Also includes Flight Simulator, other games and joystick. Sell all for £500. Write to: Acting Lientenant J.D. Hoyle, Commando Training Centre Royal Marines, Officers Mess, Lympstone, Devon.

Calling Vic-20 owners. I need a male or female penpal aged 13-16 to swap games and tips. Write to: Eric Young, 62 Husband Road, Forest Hill, Victoria, Australia 3131.

Holland CBM64 owner wants to exchange programs (disk) and tips with UK 64 owners. Many progs available. Please contact: Marnix D Tellings, 4 Ebstroom, 3224 CD Hellevoetsluis, Holland.

Vic-20 owners: penpal wanted, age 13 to 15, boy or girl. Write or phone or send a program on tape to: Chris, 19 Ardfin Road, Prestwick, Ayrshire, Scotland. Will reply (unexpanded Vic).

Vic-20 £40.00; C2N (Vic-64) £25.00; Vixen 16K switchable RAMpack (guaranteed) £25.00; 30 software titles includes top games, utilities, educational, £2.00 each; books (offers). Accept resonable offers on single items or the lot. Tel: Coventry (0203) 306449.

Commodore 64, C2N cassette unit, only £200. Unwanted gift. Free joystick. Phone: Amar (01) 574 8583 or (01) 571 3051. Also 1525 printer £200, plus printer paper and labels, and free wordwizard program.

Commodore 64 software to swap or sell. Many British and American titles. Programs include Zaxxon, Blue Max, Jumpman Jr and many more. Write (send your lists) to Per Olav Stava, 4274 Stol, Norway. (All letters answered)

CBM64 Vic-20 Hardware Utility. Load from C2N cassette and copy at same time to second recorder. Plus system reset button. £7.00 inc or sae for details. A Denby, 6 Ropewalk, Alcester, Warks B49 5DD.

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Commodore 64, C2N cassette recorder, joystick, paddles, plus computer dust cover, five games including Hobbit. Also Reference Guide with two other books. Computer only three months old; worth overall £310, sell £200 ono. Ring: Petham 602 (evenings). Canterbury area, Kent.

Software for sale for the Vic-20 including many expanded games such as Krazy Kong and Jet Pack. If you want one of these games please contact Alex on 01-940 5767 or Paul on 01-940 2012.

Vic-20 8/16K Hi-res drawing (without Superexpander). 174x160 pixels. Draw (m/c), Point (m/c), Circle, Elipse, Spiral, Triangle, Square, Joystick functions. Store drawings on tape, 1520 printer, and in memory (16K). Tape with machine code routines, demo programs, sample drawings/maps, plus instructions for £2.50 from: A Blomberg, 134 Aldebury Road, Maidenhead SL6 7HE.

Penpals wanted, male or female, 12-17 years, to exchange games, programs, ideas, etc. Vic users only! Alan Simpson, 64 Moorside South, Fenham, Newcastle-upon-Tyne NE4 9BB.

Wanted: girl penpal aged 13-15, must own Vic-20, no experience of programming needed. Swap listings etc. If interested please write to Paul Hodskinson, 15 Teesdale Avenue N.S Blackpool, Lancs FY2 0TH.

Graphix 64: over twenty commands enables you to plot/erase points, draw lines and fill/erase areas on screen. (As advertsied in Vicsoft magazine). Used only twice. Bargain at £8.50. Tim Bak, 117 Kingsway, Braunstone, Leicester LE3 2PL.

Vic-20 plus Programmer's Aid, 16K RAM, Stack motherboard, Stack rifle, Intro to Basic 1 & 2. £80 plus of software – Wacky Waiters & Flight Path 737. £30 plus of books including Your Computer & Commodore User. All in good condition, 1½ years old. Price £160 ono. Paul Bateman, 154 Morley Street, Goole, North Humberside. Tel: 04054313.

Vic-20 plus C2N cassette plus 16K. Great condition. Misc software (Arcadia etc), Programmers Reference Guide, magazines. Bargain at £150. Jeremy Webb, Field House, Saint Edwards, Oxford. Tel: Oxford 54378.

Vic-20 plus C2N plus 16K plus 4 learning tapes plus 4 games tapes plus 3 Vic books plus dust cover plus ZX printer and interface plus many comp. mags. £150. Tel: (0482) 863443.

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TASK SET!
THE BUG STOPS HERE!

commodore 64

Alice IN VIDEOLAND



PURE MAGIC!

Join Alice in her journey through Videoland - an enchanted place populated by strange creatures such as bread-and-butterflies and pipe smoking caterpillars; where little girls change size and flamingos turn into croquet mallets!

Alice in Videoland is a revolutionary new concept in entertainment for the Commodore 64, incorporating some of the finest graphics ever seen on any home computer, accompanied by a charming musical score. There are four different game scenes involved, and your performance in earlier ones will affect your ability to get through later ones and determine your eventual total score.

Scene One - Stunning title page graphics give way to the first game scene as Alice falls into the rabbit's warren. Score points for collecting the objects to be found there - including keys to open doors, bottles to make her smaller, cakes to make her bigger!

Scene Two - Out in the garden the Cheshire cat looks on as Alice meets the pipe-smoking caterpillar. Help her to catch the bread-and-butterflies and the rocking-horse flies that change into the balls used in the croquet game in the last scene!

Scene Three - Alice is a pawn in the chess game where her opponents are the Jabberwocky and Tweedledum and Tweedledee. Help her across the board by protecting her with your White Knights!

Scene Four -The most bizarre croquet game ever! Help Alice hit the balls through the playing-card-soldier hoops before the Queen of Hearts stomps on them!

Alice in Videoland is available for the Commodore 64 on disk - £12.95, and now on cassette - £8.95.

Alice in Videoland features graphics created with the Koala Pad.

Audiogenic LTD

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